

Australian Model Railway Association

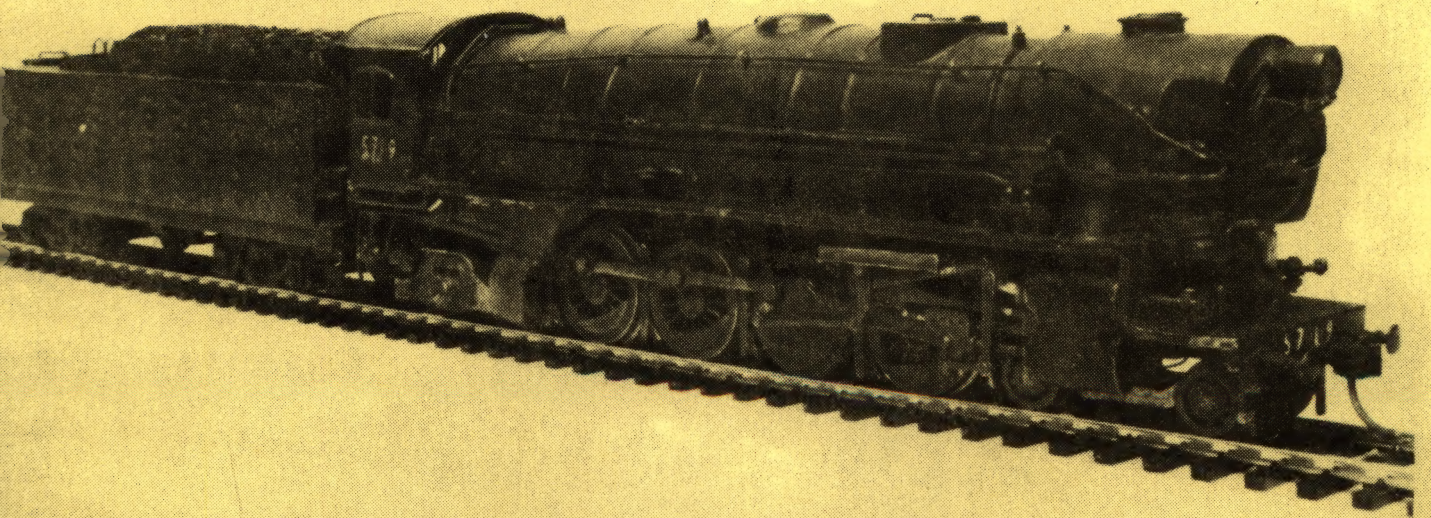
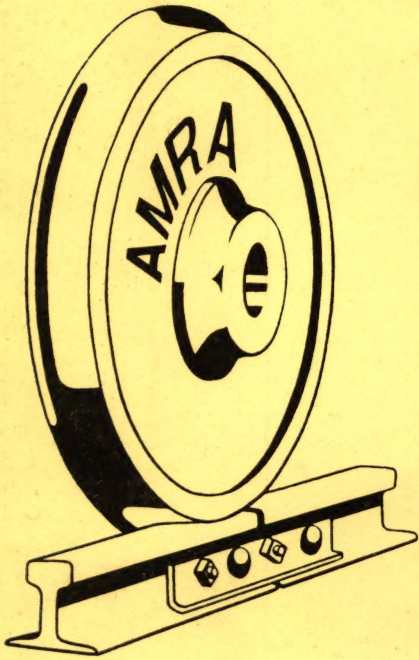
JOURNAL

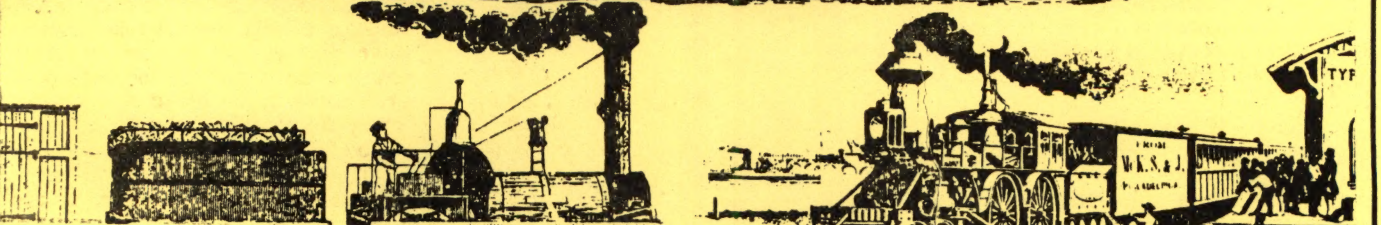
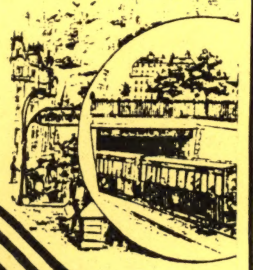
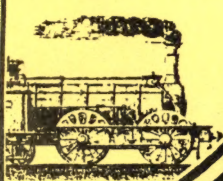
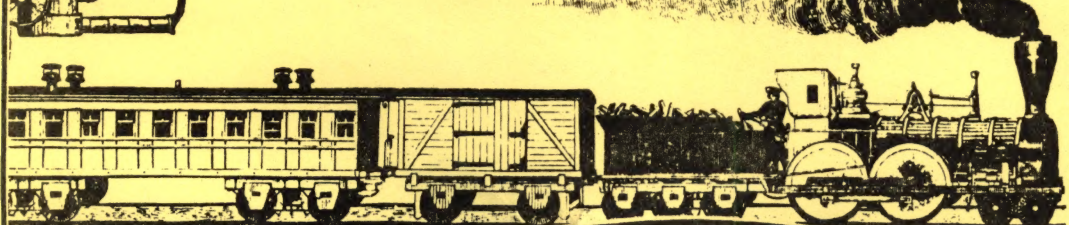
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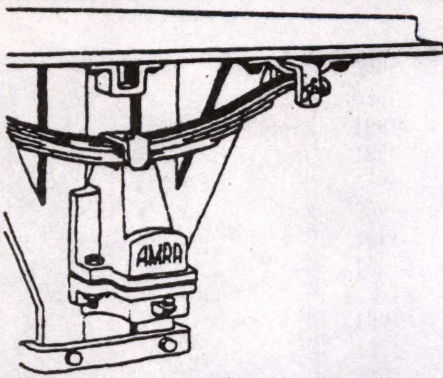
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THE ENGINE SHED

55

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MODEL RAILWAY EQUIPMENT FOR ALL AGES



Editorial JOURNAL BOX . . .

Editorial

It seems that at least one person reads my Editorials (see Pop Valve). Well, in this issue, I must agree with Rob Gorrell, a lot of my trains go back a bit to the older Triang, Hornby three-rail, Lima, Playcraft, Bachman, Jouef, etc. Many of them have been kit bashed around with my big file to resemble something Australian - including some N, TT and 00 gauges. I haven't yet tried it on 0 gauge, but I have been tempted with gauge 1 (or garden gauge) to convert a Bachman 'big hauler' 4-6-0 into a W or S class VicRail loco of the 1880s.

As for nostalgia - I can remember seeing, in the last few years, a couple of very neat and well operated layouts featuring Triang TT trains. One of these days I must get around to building a multi gauge diorama type layout to be able to run my collection of various older 'toy' trains. I wonder what I will call it, and what sort of a story I can dream up to justify its existence - then again, as Rob says - why bother, just be proud to own and run them.

One thing though, my collection of Thomas the Tank and Friends, just shows what a little clever advertising can do for model trains. Every time it comes out of the boxes, it is instantly recognised by all and sundry, even to recognising Duck, Gordon, Percy and Diesel, as well as Thomas.

Now I must see what I can do about getting Bill and Ben, Daisy and Boco, and motorising Toby the steam train.....

Now if I could kit a spud motor under the diecast ERTL body....

**Rex Little
Editor**

On the Cover

Roger Lloyd's scratchbuilt body/kit-bashed Tyco mechanism NSWGR 57 class loco. See story in column three.

Photo Roger Lloyd

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From the Managing Editor

This issue is rather later than normal. In order to get things back closer to normal, editorial cutoff for the next issue will be 25 June. We now have a separate computer for our typist Helen so this will speed things up somewhat.

I have run out of photographs submitted by members suitable for the front cover so this issue's cover features my 5719. I constructed this model some 10 or more years ago. It uses a Tyco Mikado mechanism similar to the methods described by Garry Kahler in the October and December 1988 A.M.R.M.

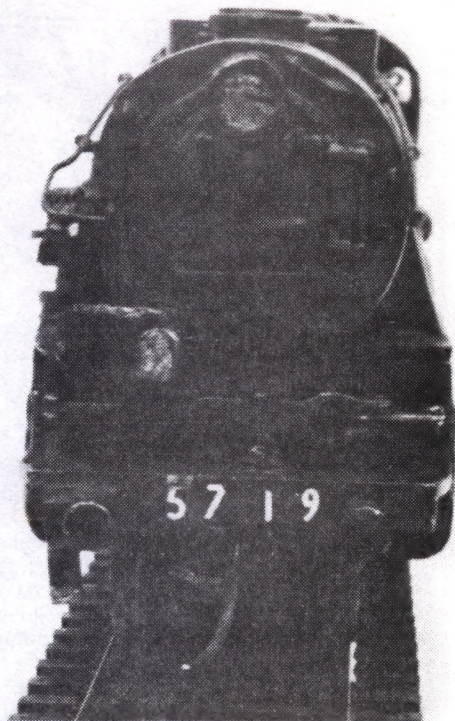
Two major differences are that I included the brake gear and the conjugating valve gear works. This feature seems to attract some interest on the odd occasions I run the loco. The brake gear on this loco is very prominent and the wheels appear to be too far apart without it.

The body is scratchbuilt out of brass with some commercial items such as the air compressor.

Roger Lloyd

Meritorious Awards

Bob Gorrell	1965	Audrey Cornish	1980
Ivor Bunker	1967	Ray Brownbill	1980
Alan Dowel	1969	Bob Edwards	1981
Stephen Suggit	1969	Graham Watson	1981
Rex Little	1970	Steve Malone	1982
Norm Read	1970	Alan Porter	1982
Mal Baker	1971	Stuart Westerman	1982
Jack Treseder	1971	Bob Wardrop	1982
John Sneddon	1972	Gordon Duncan	1983
John Dunn	1972	John Hill	1983
Graham Larmour	1972	Corinne Bunker	1983
Ken Down	1973	John Martin	1983
David Ellis	1973	Keith Wilcox	1983
Arthur Robinson	1974	Norm Chapple	1984
Bruce Lovett	1974	Roger Lloyd	1984
Eric Doherty	1975	Val Hogan	1984
June Larmour	1975	Bob Mawson	1984
Fyfe Thorpe	1976	Manfred Ebinger	1985
Eric Lyon	1976	David Bennett	1985
John Skilton	1976	Gus Durham	1985
Keith Robinson	1976	Fred Green	1986
Dot Treseder	1977	Bill Secker	1986
Tony Gray	1977	Stuart Wall	1986
Jim Christie	1977	Bert Hetherington	1987
Jack Parker	1977	Graeme Nitz	1987
Rup Ackland	1977	Dennis Ling	1987
Bill Moorehouse	1978	Phillip Kelly	1987
George Bray	1978	Ken Edwards	1987
Arthur Hayes	1978	Ed Hogan	1988
Simon Mead	1978	Brian Southwall	1988
John Harry	1979	Tom Parkes	1989
Harold Warren	1979	Bob Dunn	1989
Cec Wall	1979	Jim Bilby	1989
Jack Eagles	1979	Barry Keens	1989
Ted Thoday	1980		



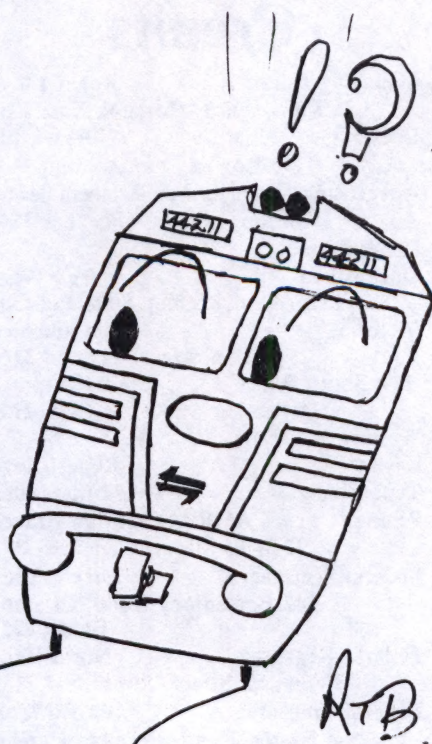
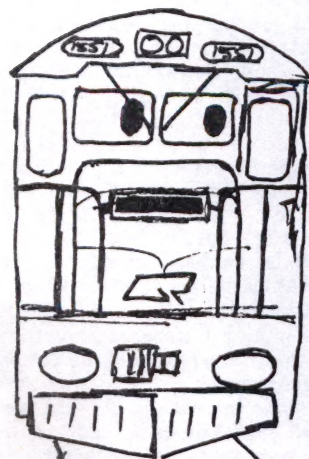
A front view of 5719.
Photo Roger Lloyd

Is OZTRAK a Possibility?

A new Amtrak-type structure looks likely to be set up to handle interstate rail traffic in Australia. Such a body would run its own loco fleet, cars, wagons, etc.

GHB

ROUND HERE NARROW MEANS
TWO FOOT. YOU'RE ~~BROAD~~ GAUGE
SHORT!!



A Process of Elimination

By Ted Ward

Assembling a complicated superdetailing kit onto a steam locomotive was becoming a very involved business, what with alterations to the design in additions and deletions, and, as some steps were being improvised, that is, being instigated without any instruction on the assembly sheet provided by the makers of the superdetailing kit, things were becoming increasingly complex. To make matters worse, the instructions themselves were rather casually drawn, adequate, yes, but rather highly piggedly in their approach to the subject.

The point was reached where a tidier approach to the project was required. What was done so far, and what remained to be done? Looking at the instruction sheet for inspiration was increasingly less helpful, as it was becoming a mixture of 'what has been done' and 'what hasn't been done'.

Off to the local newsagent with the instruction sheet and one copy of the instructions was made in the photo-copying machine. Using white plastic paint, the copy was 'edited', and everything which has been done so far was painted out, leaving the remaining details standing forth awaiting attention.

The remaining details were now very apparent, outstanding even, and it was a very simple matter to give them individual and appropriate attention.

Interlocking Turnouts and Signals

by Steve J Chapman

Part 1 - Why and What

It is very rare to find a prototype railway that does not use signals to control the movement of trains. With model railways, signals appear much less often. There is a very good reason for this.

On the prototype the signals are there for the purpose of controlling train movements. Very basically, the line is broken up into a number of sections called blocks. One or more signals are placed to control the entry of trains into each block so as to reduce the change of two trains attempting to occupy the same section of track (and hence colliding) to the lowest possible level.

With a model railway we also have the track broken up into blocks and allow only one train into each block. There is, however, a major difference between the way entry of trains into blocks is controlled on a model railway. Usually we can see where each train on a model railway is. When a model railway is large enough or arranged in such a way that we cannot see all of the trains, we can still tell whether a block is clear to receive our train because it is necessary to link that block to the controller that is driving our train before the train can enter the block. If the block is occupied then usually it will be connected to another controller and this will be visible on the control panel.

Only when we have a block (or a number of blocks) which are not visible from the control position and on which it is desired to hold trains and not just run them, do we need to consider some form of signalling. Even then the indicator usually consists of a block occupancy light on the control panel rather than a physical signal on the layout itself.

The need for signals which exists on the prototype is totally absent on a model railway. This explains why so many unsignalled layouts exist.

The reason for including signals on a model railway is not the same as the reason for their use on the prototype. Signals appear on model railways because the person building a model railway wants to create a miniature copy of the real thing. Depending on the degree of accuracy that is desired (with regard to signalling) a number of alternatives are available.

If physical accuracy is all that is required, then, non-operating signals set in the appropriate locations will be all that is required. Signals are fixed in the clear position (or possibly the warning position for distant signals) so as to avoid having trains pass a signal that is at danger. The signals are then effectively ignored when the layout is operated.

An appearance of operational accuracy can be obtained if signals which can be operated from the control panel are installed. When a train passes a signal it can be changed to show the danger aspect and once the block is clear again, the signal can be returned to a clear indication ready for the next train. The problem with this is that the trains are not dependent on the signals and the layout can still be ignored when the layout is run. Also it is possible to give clear indications on signals when a clear road is not set.

The prototype uses interlocking between turnouts, signals, etc, to ensure that signals can only be cleared when the road

ahead has been set and to ensure that the set road is not changed while the signal is clear. This function is performed by the signal box or (as the Americans call it) interlocking tower. If this interlocking is duplicated on the model, then greater realism can be obtained.

Before we can apply interlocking to our layouts, we first of all need to determine what to interlock and in what way. In order to understand what sorts of interlocking are required, let's first look at a number of simplified situations involving a small number of turnouts and signals.

Let us first consider the situation with a turnout preceded by a signal (figure 1). The signal can be cleared to allow trains to use either the main line or the branch. There doesn't seem to be any relationship between the signals and the turnout that requires interlocking. In fact there is a need for interlocking when this situation occurs on the prototype.

Let's consider what can happen if there is no interlocking and assuming that trains obey the signal. A train may be passing the signal which is clear in order to travel down either the main line or the branch (it doesn't matter which). While the train is travelling over the turnout, the signalman decides to change the points so that the next train can take the other road. The result would be a derailment.

The signal therefore needs to be interlocked with the turnout in such a way that the turnout is locked in position whenever the signal is cleared. The signal must then be returned to danger before the turnout

can be reset to the other road. In order that we know what we are referring to when we look at how we can achieve the various types of interlocking, let's call this (for the purposes of this article) a type ONE interlock.

If we replace the signal with a junction signal (figure 2), then the situation is very different. What form of interlocking would be required in order that the signal can only show a clear aspect for the road that is set?

There are, in fact, quite a number of interlocks which should exist in this situation. The two parts of the junction signal can be treated as separate signals. Each of these signals needs to be interlocked with the turnout.

The main signal needs to be interlocked so that the signal can only be cleared when the line is set for the main. This ensures that a train cannot be given a clear setting on the main line unless the main line is actually set (obviously). The turnout also needs to be interlocked with the main signal so that when the main line signal is clear that the turnout is locked in position.

The interlocking between the main line signal and the turnout therefore needs to be such that reversing either the signal (clearing it) or the turnout (setting it for the branch) should lock the one not reversed in the normal position. Let's call this a type TWO interlock.

The interlocking for the branch signal is slightly different because the branch signal should only be able to be cleared when the turn is set for the branch (i.e. reversed) and the turnout should be locked in the reverse position when the branch signal is cleared. Let's call this a type THREE turnout.

The same interlocking applies if the

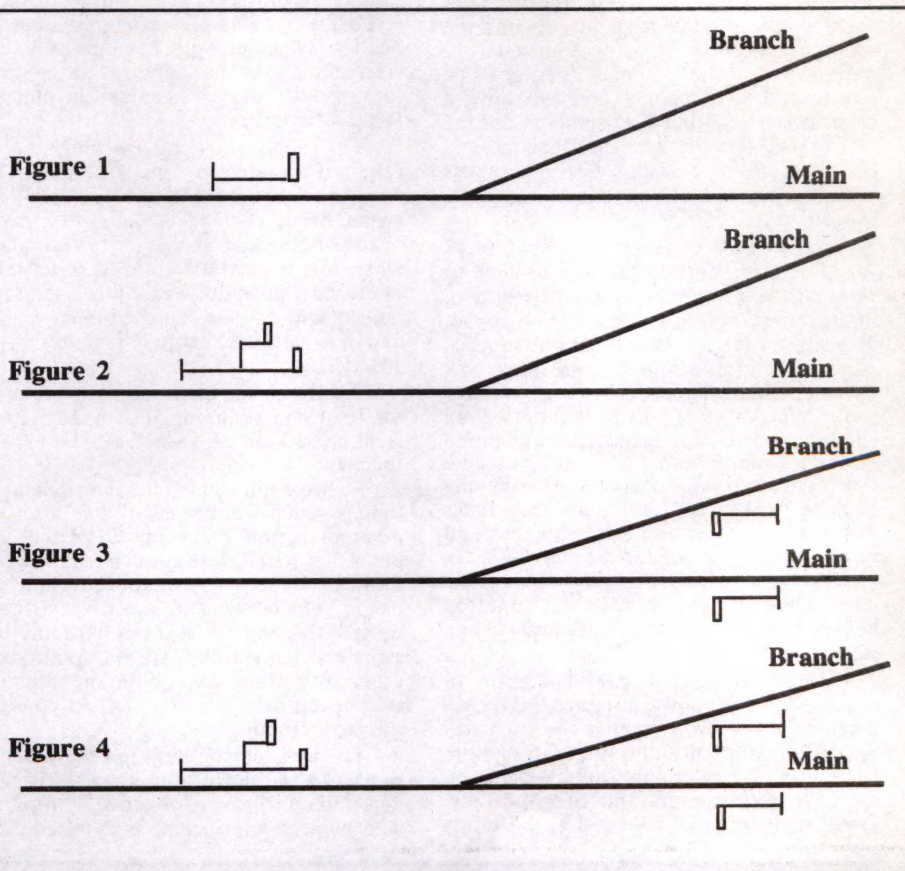


Figure 5

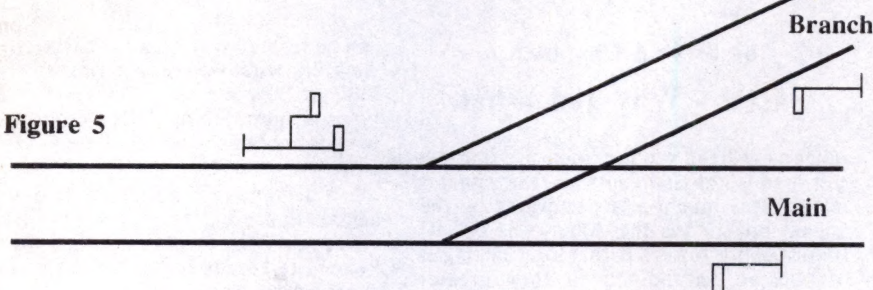


Figure 6

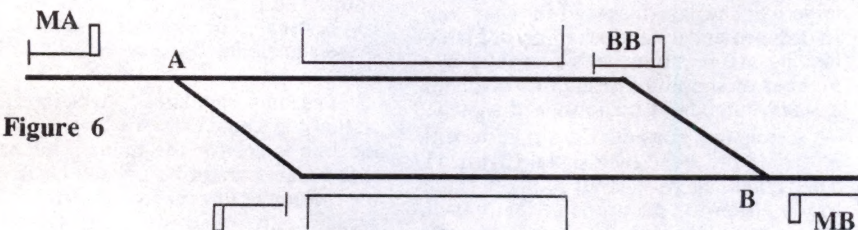
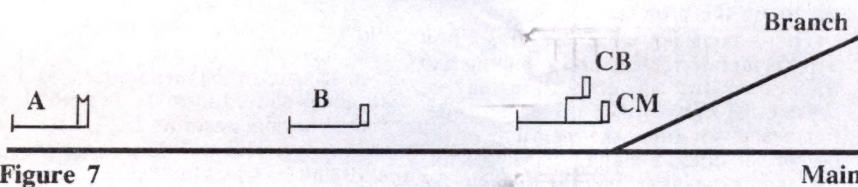


Figure 7



signals are placed on the other side of the turnout as in figure 3. The main line signal requires a type TWO interlock and the branch signal a type THREE.

In figure 4 we have both sets of signals. The interlocking that is required between each signal and the turnout remains the same, but we now have the additional requirement that the two main line signals be interlocked so that only one can show a clear aspect at a time and similarly for the two branch signals. This interlocking is in fact the same type of interlocking as exists between the main line signals and the turnout (type TWO).

Let us now consider a double track junction as in figure 5. The signals need to be interlocked with their appropriate turnout in the same way that we determined above. The signals for the two directions do not need to be interlocked because they now apply to different tracks. However, we now require the two turnouts to be interlocked so that both paths through the diamond crossing cannot both be set at the same time. We need interlocking so that having turnout A set for the main line locks turnout B also set for the main line and having turnout B set for the branch locks turnout A also set for the branch. This interlocking is identical to that required between each turnout and its branch line signals (type THREE).

The signalling for a passing station on a single track is shown in figure 6. We will assume for the moment that the train will always take the left hand road through the station. Again as for the double junction we have four signals and two turnouts. Once again the signals need to be inter-

locked with the turnouts in the same way as we have already discussed. The signals labelled MA and MB need to be interlocked with the corresponding turnout (A or B) in the same way as the main line signals were interlocked for the junctions (type TWO). Similarly signals BA and BB need interlocking with turnouts A and B (respectively) in the same way as the interlocking of the branch signals at the junction (type THREE).

The only other interlocking that is required is between signals MA and BB (and similarly for MB and BA). When signal BB is at danger, signal MA needs also to be locked at danger and similarly when MA is cleared, we need to lock BB in the clear position. Again this is the same interlocking as between the branch signals and the turnout at the junction (type THREE).

To obtain the corresponding situation for right hand running, just hold the diagram up to a mirror. Everything else remains the same.

Figure 6 introduced the interlocking of signals which will be passed one after the other by a train travelling down the line, but which are all close enough together that they all belong to the one station (or block). The interlocking described between signals MA and BB will apply to any two signals which will be passed one after the other by a train, except for the situation leading up to a junction. Let us consider this now (figure 7).

The interlocking between the junction signal (C) and the turnout has already been determined when we looked at figure 2. So what type of interlocking is required if the

junction is preceded by a stopping (home) signal (B) and a warning (distant) signal (A).

Signal B will depend on the aspects displayed by both the main and branch signals at the junction. Only if one or the other of these two signals shows a clear aspect can signal B also be cleared. Conversely, when signal B is cleared, then whichever of the two parts of the junction signal shows a clear aspect must be locked in that position. This is a more complicated situation than those we have discussed previously, but is still achievable. Let's call this interlock a type FOUR.

The distant signal (A) can be interlocked in two different ways. It can either be interlocked only with signal B (type THREE) and be permitted to show a clear indication whenever a clear road is set or it may be required to show a warning when the line is set for the branch, even when the other signals give a clear indication (indicating to the driver of the train that he is required to slow down to go through the turnout). In this case the signal will also need to be interlocked with the main line signal CM (also a type THREE interlock).

The example situations given will probably make up at least part of the track work of your layout. Wherever these situations occur the appropriate types of interlocking can be applied. The rest of the layout can then be dealt with using similar principles - examine the situation to see what combinations of settings could result in an accident (assuming that all signals are obeyed). The appropriate types of interlocking can then be applied.

The individual simple situations for which interlocking has been determined can then be combined together and any additional interlocking between the sections can then be worked out. In this way the entire prototype style of interlocking requirements for the layout can be worked out (except for the facing point locking bars and only a signalling enthusiast would bother including these).

To make things easier to keep track of when working out the interlocking we can use a diagram similar to the ones that the prototype use. For each signal box they draw up a track plan showing all of the turnouts and signals. The signals are considered to normally be at danger. To record the normal setting for turnouts the two lines are drawn so that they do not quite touch and only the normal road is shown as a continuous path. The various turnouts and signals are then numbered and can be referred to by these numbers when determining the interlocking. Each point tiebar and each signal arm should be numbered separately unless there are two which are always intended to operate together from the same lever or switch.

Once the entire interlocking requirements have been worked out you can then determine just how much of the interlocking that you intend to actually apply to the layout (since it is only a model some or even all of the interlocking can be left out without causing a major disaster). I suggest that if you intend to incorporate any interlocking at all that you work out the whole thing first before deciding how much you actually wish to apply - you might find that with a little extra effort that quite a lot more of the interlocking can be easily included and improve the realism of your layout quite substantially.

A Standard NSW Coal Stage

One of the most distinctive features of the NSWGR (as it was then called) were the magnificent elevated coal stages with their trestle ramp. One of my fond childhood memories is going past Eveleigh with the smell of coal smoke, the sight of all those locos including 38's and 36's and the large coal stage that was alongside the Illawarra lines past Redfern.

Once I took up modelling seriously, I was determined to build such a structure. But like many of my intentions, this one sat on the back burner until I attended one of James McInerney's first 'Modelling the Railways of NSW' conventions at AMRA Rockdale. At the convention was a model of the Harmon type as found at Casino and Grafton. Having never seen this type in the flesh, I was more inclined to the traditional type which, incidentally I had not seen modelled before. All this gave me the

by Roger Lloyd

inspiration I needed so during that trip I paid a visit to the Railways disposals shop below Sydney Station (is it still trading and under what name?) and was able to obtain a plan of a 'standard coal stage'.

This does not represent any particular prototype that I could find. Most of the coal stages were longer and some had sanding facilities added (Demondrille was a good example). About the closest to the plan may have been Cowra.

'Roundhouse' published by the NSW Rail Transport Museum was a good photographic source. For anyone interested, the following issues contain photographs of interest:

Issue	Page	Location	Comment
Apr 76	8	June	Sanding structure
Oct 77	26	Port Waratah	
Jan 79	28	Goulburn	
Jan 80	12	Cowra	Distant view end
Jan 82	7/16	Enfield	Shutes and side timberwork
Apr 84	24	Enfield	Double sided
Apr 84	31	Goulburn	Trestle
Oct 84	14/17	Hawkesbury River	
Jul 86	12/16	Werris Creek	

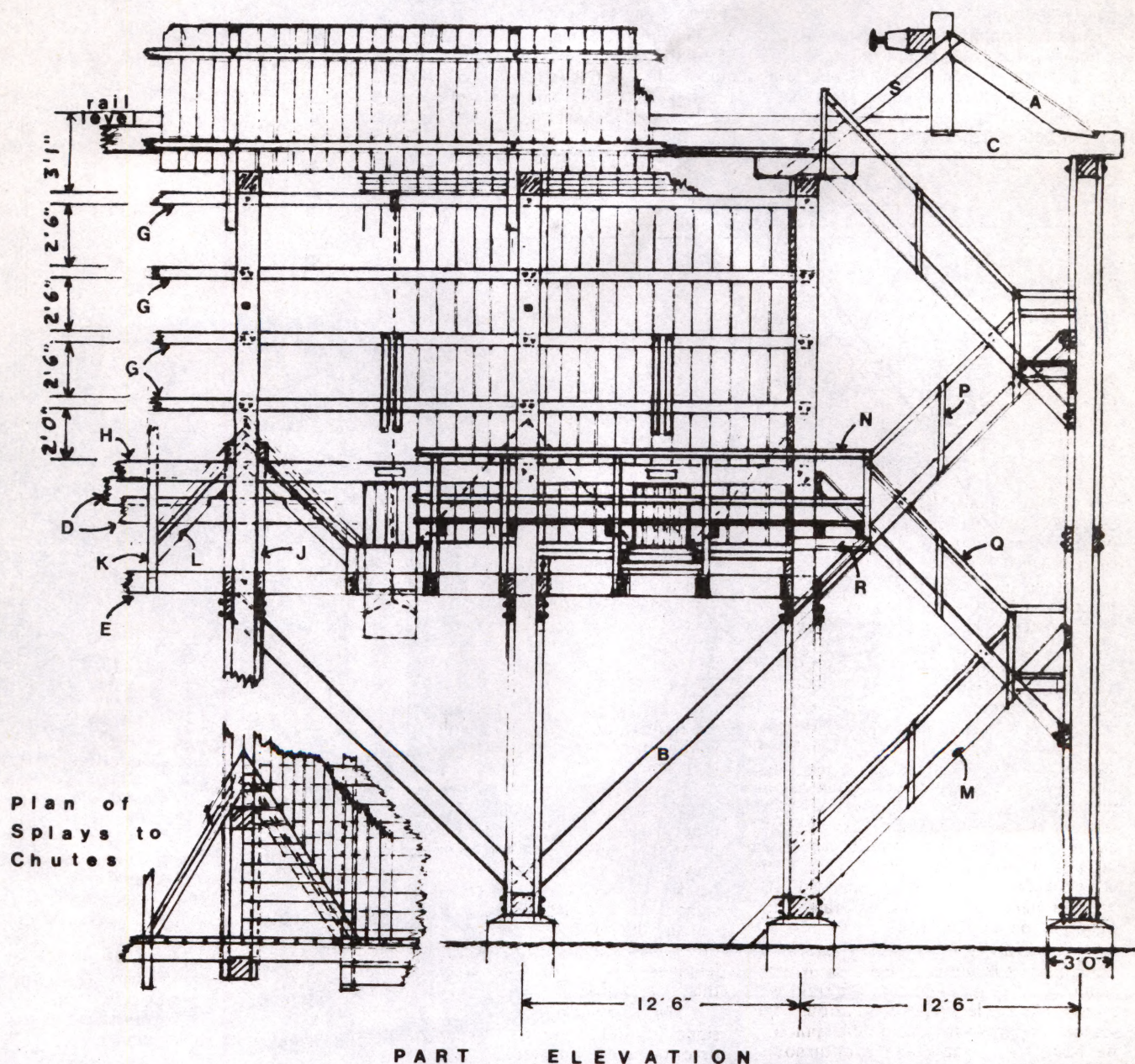
An excellent article and photographs of Demondrille was in 'The Railway News' Sep-Dec 82 issue, a publication of the NSW School Railway Clubs' Association.

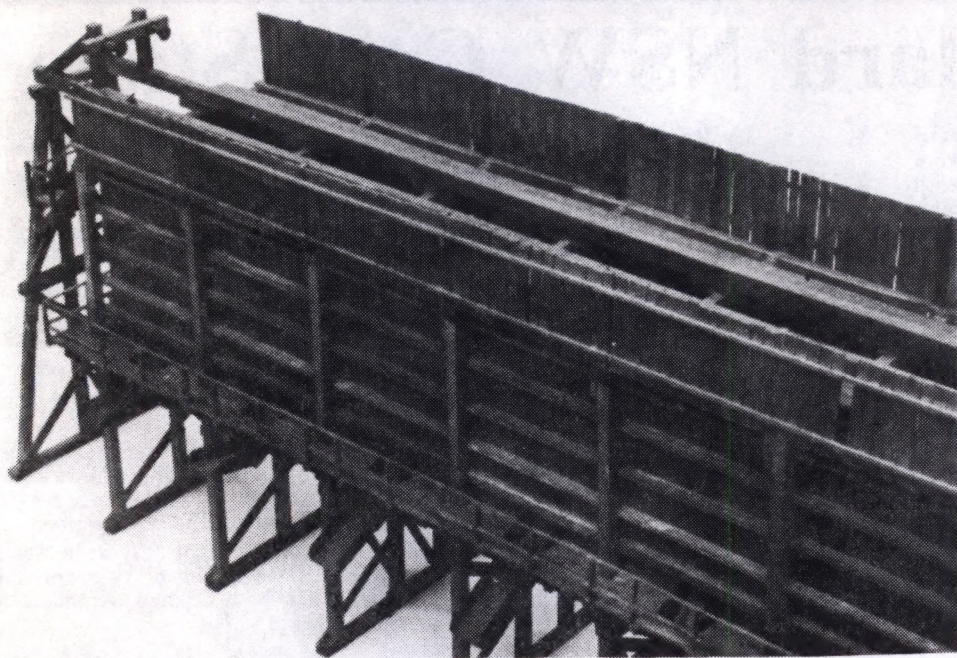
The other type of coal stage was described as the 'Holman' type and these were at Dubbo?, Orange, Armidale and Glen Innes.

STANDARD N.S.W. COAL BUNKER

Ratio 1:87 HO scale

Drawn by Roger Lloyd





The glue used was gap filling CA glue such as Network 2000 or Magic Gap Filling glue.

The model is not yet complete as the ramp trestle will not be built until I am ready to install the stage in some future layout. For this reason the rails have also not been put in place. I started to put bolt heads in the end pier (under the buffers) but I ran out of patience. To represent the bolt heads I drilled small holes, inserted a track pin minus the head. Track pins have a square shape which is a reasonable representation of the prototype.

I painted this model after it was constructed but the paint does not absorb into the timber where the CA glue remains. For this reason it is probable better to stain the pieces first before assembly.

Well, that's about all there is to it other than patience.

So much for the prototype, now for the model. I don't intend to give a blow by blow description, mainly because I made the model two or three years ago and my memory is fading!

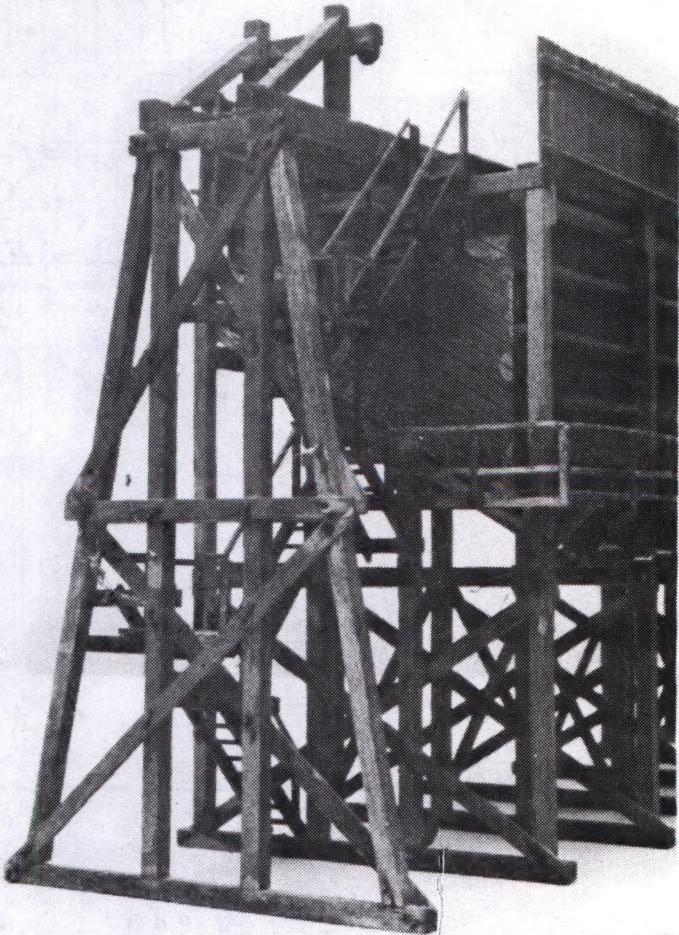
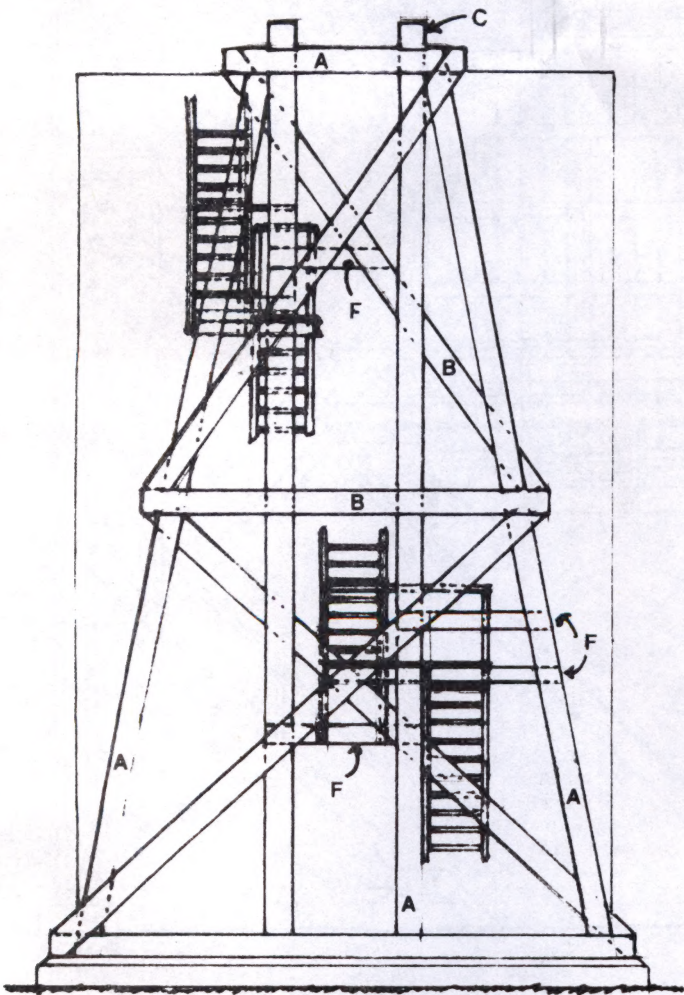
Construction material was North Eastern timber. Many sizes can be purchased as 'Scale Lumber'. Other sizes can be cut from sheets of North Eastern timber. The sheeting for the bunker sides and ends was cut from scribed North Eastern timber. The

paling type safety fence along the top was made by cutting scribed sheet across the grain to the required height and then separating this into individual palings by cutting along the scribing.

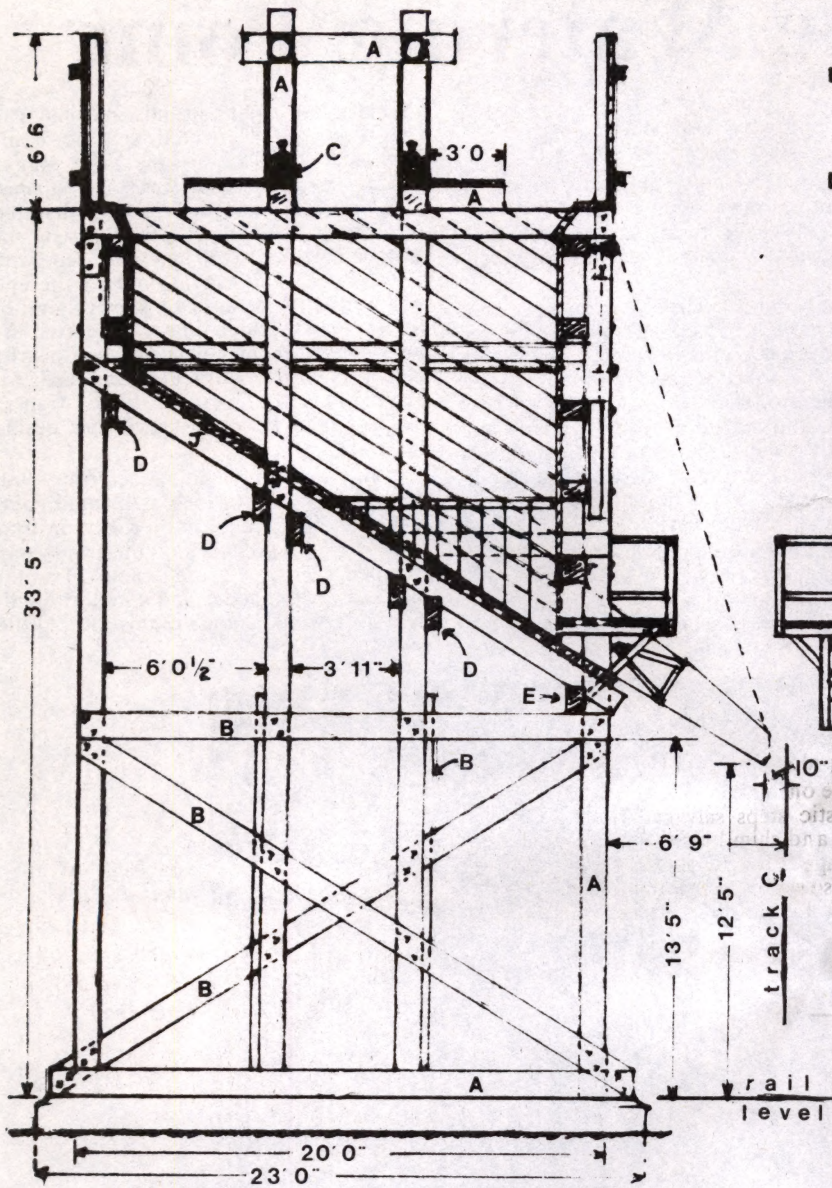
The only other materials used were sets of plastic steps salvaged from a derelict model and shim brass for the coal shutes. I managed to find some miniature hinges for these shutes so that they can be lowered or raised.

TABLE OF TIMBER SIZES (INCHES)

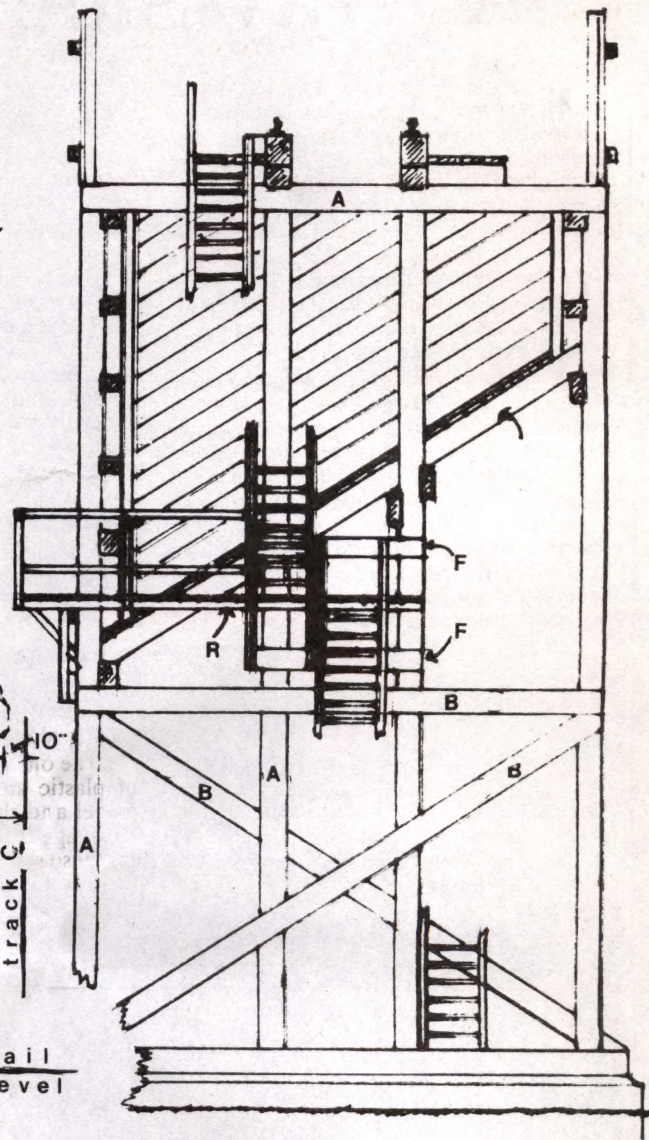
A	12 X 12
B	12 X 3
C	14 X 12
D	14 X 6
E	12 X 9
F	9 X 3
G	10 X 6
H	10 X 10
J	10 X 5
K	10 X 5
L	10 X 4
M	8 X 2 1/2
N	4 X 3
P	3 X 3
Q	3 X 2
R	6 X 3



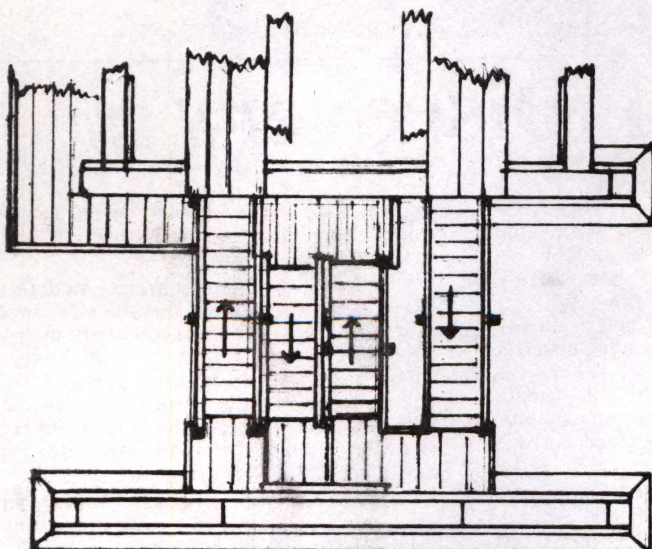
BUFFER TRESTLE



SECTION THROUGH BUNKER



END ELEVATION



PLAN OF STEPWAY
Buffer & rail bearers removed

Resistors in Electronic Devices

from *Hobbies Illustrated*, May 1947

To increase the ohmic value of a moulded carbon resistor, simply reduce its thickness uniformly by filing a flat along its length with an ordinary metal file. Use an ohmmeter to determine when the desired value is secured. Apply varnish to the cut surface to protect it from moisture. The wattage rating will be lowered slightly.

Pickups

Some of the things which have been excluded from further consideration by the model press are third rail pick-up skates, and centre third and outside third rail current collection. Early editions of AMRA Journal refer to many things, products and processes which are simply unheard of today, and one can only wonder which of our present modelling essentials will slip into the limbo of forgotten things when time and technology catch up with them.

Laying Track

Some advice from Mr Leigh Tingle in his article in the November/December 1946 issue of *Hobbies Illustrated* - hand laid or flexible track is best laid commencing with a curved portion first, as, while the track or rail will tend to form a natural curve, straight track is technically more difficult to make correctly.

A Way-Side Watering Point

by Ted Ward

Prototype railways are often faced with lines which run over mountainous country and which, by its very nature, causes the consumption of a lot of fuel. In the days of steam, this meant too, the use of a lot of water, and, consequently, a great weight of water. If this extra water had to be carried on the locomotive, or, rather, in the tender, every ton of it meant just that much less load could be drawn behind the already heavily taxed locomotive or locomotives if double heading was employed.

Accordingly, ways of avoiding the need to carry extra water on board steam locomotives were sought, and one way was to have a watering point somewhere convenient, possibly at a mid-way point in hilly country. It was usually necessary to have the watering point set on level track so that the train would be horizontal when it was time to start again, thus minimising the necessary starting effort. Often, the watering point was not at any recognised town,

but was merely 'there', only in existence for locomotive purposes. There need not necessarily have been railway staff stationed at the point either, just a water-spout.

The example which has inspired this article was Cape Horn, a servicing point on the line from Cairns in North Queensland out to the wilds of the Gulf Country, or near thereto. Cape Horn was not a listed station, and indeed probably wasn't even officially called Cape Horn, but it endured this epithet because, in the words of an old engine driver, it was miles from anywhere and nobody lived there.

A similar installation is worth installing on a model railway because it is a simple way to add an extra stopping point on a hilly section of track. With a name like Cape Horn, it adds a bit of style and

romance too, and an installation similar to the prototype illustrated can be easily emulated. At Cape Horn, there was a trickling stream or brook which was dammed high on the hill above the line or diverted into a concrete storage tank. From the storage tank, a 6" (150 mm) steel pipe with a water-cock and canvas hose on the end was waiting to be used. A sturdy stand or framework of bridge timber supported the pipe above tender height. A shed nearby held a small stock of oil and sand, used for engine wheels to assist traction. A small heap of sand was also in evidence beside the track.

An ash-pit for cleaning loco fires, with its attendant pile of loco ash would complete this little scene, not to mention fruit trees which have sprung up from long dropped seeds. A spare length of water pipe, an access ladder and a coil of hand-held hose would complete this pretty little scene.



The watering point at Cape Horn, Qld being approached by PB15 No 597 in June 1963

Photo Ted Ward

Invention and Discovery

by Ted Ward

One of the most fascinating things about railway modelling is invention and discovery. The two are thought of as one because each is practically synonymous with the other, and indeed, each goes hand in glove in harmony as an ongoing intellectual duet.

It is not being unkind to say that every one of the great ideas of modelling was always there, just waiting to be found by someone. The credit, of course, for their discovery and invention rightly goes to that individual or individuals who first 'dug them up' and let the rest of us know about them, either by word of mouth, an article in Journal, or perhaps best, by releasing another product on the market.

As in other fields of endeavour, progress is only ever made at the front, and so it pays everyone to keep abreast of all

advances made in every field of modelling. One should constantly keep in touch with what is happening so as to see where the state of the art is at any time. When this state is reached, progress can begin to be made. One should read as many magazines as possible, both old and new, keep track of just what is in the hobby shop, attend as many club or branch meetings as practical and, like even a virtuoso musician, keep practising the art.

Archimedes is credited with having originated his famous principle while sitting in his bath musing. His mind, obviously, was ever active, and we too can use this Archimedian Principle to ponder the immensities of modelling. With the little problems and difficulties of modelling ever being pondered, it is amazing and gratify-

ing when the light suddenly dawns. Something is invented and/or discovered, and the world moves forward.

It is worthwhile to embrace new fields of challenge and to embark upon new ways of doing things. Try and read every magazine article for every scale and gauge. There are bound to be some things there which, boiled in water or heat treated some way will suit you perfectly. That is invention and discovery too, for with thought and imagination, all things are possible.

As this narration began, invention and discovery are one of the most fascinating things about railway modelling, and so the reader is urged to open his mind to all things modelling, and sally forth into that beautiful world of discovery where everything is better.

Are Garrett Engines Synchronised?

by A W MacDonald

The question is often raised among railway men and enthusiasts as to whether or not the engines of a Garrett locomotive work synchronised. Consideration of the facts leads me to the opinion that at times they could be, but more by luck than good management.

We all know that on curves the outside wheel travels further than the inner wheel on railway track. To make up for this, one wheel has to skid, if only for a minute fraction of time; so, which wheel slips, or is it balanced equally between inside and outside, and do absolutely identical circumstances apply to both engines at any given time?

Admitted, in design action is taken to

counter the skid problem by way of the shape of the rail head, tyre profile, camber of track, vehicle wheel base, and curve radius to mention but a few. However, rail heads wear and become pounded out of shape, as do tyres, and flanges wear 'sharp'. Vehicle wheel base, particularly on locomotives, is not a constant - big ends wear, coupling rods and motion develop slack, axle boxes and horn checks wear (all contribute to that 'clang' we've heard so many times), clear and tear, thus negate the designers' intentions, to varying degrees, causing me to think that if synchronisation does occur, luck predominates over good management.

Delving into mathematics. The driving wheels on QR Beyers was 130 cm. Thus, in one revolution, a 'driver' would travel approximately 410 cm (4.1 metres). At 60 km per hour, the distance covered in one minute is 1000 metres, so with a wheel circumference of 4.1 metres, the wheel turns 243 times in that minute, or four times per second. With each revolution of the 'drivers', eight exhausts are produced, one second in time produces 32 exhausts. Is the human eye and hearing sufficiently co-ordinated for us to be able to say 'Yes, Garrett engines do synchronise'? Consideration of the mathematics applicable reinforce my view that luck does predominate.

What do you think?

It Occurs To Me - Part 4

by R T Blodkin

Isn't it true that the countryside was there for untold centuries before any railway was built anywhere? And isn't it also true that there is one helluva lot more outside any railway boundary fence than inside it?

Now, eavesdrop on any group of railway modellers. It is Sydney Harbour to a bucketful of pumpwater that they will be discussing their latest pieces or rolling stock, or, possibly, their own particular ways of laying track. May be a new electronic control circuit that one of them may have devised or read about, or.....

Only once in a blue moon can you hear a group of modellers talking about models of taxis, buses, trucks or cars or whatever other objects that move about in the streets. Equally getting the short end of the modelling stick are the buildings. Not the

stations, loco depots, goods sheds, signal cabins, etc, but shops, stores, houses, pubs and other establishments that one sees every day in Main Street, Anytown.

Okay. So a model railway is a model of a railway or piece of one that did, does or could exist somewhere. But, just as no man is an island, being virtually useless on his own, a railway needs something other than itself to be a functioning entity.

A model of a stretch of track is nothing without moving vehicles. It is still not really much even then, other than a parade of rolling stock. Railways exist to service the country and a model of one has to depict some of that service to be a true model. Thereby, it must show, with as much truth

and accuracy as the trains themselves, just what is beyond the physical limits of the 'rail authority' border lines.

Outside the tracks isn't all rolling stock, painted backdrops and trees. All interesting models have some apparent reason or purpose in their operation, which is usually centred on a station. People live and carry on trade and business near stations. Trade and business need to be done in and around buildings, using cars, trucks, buses and so on.

So, let's not forget what keeps a railway in the foreground and make sure that there is shown to be a substantial three-dimensional background. Let's have more interest shown in the buildings of the outside (of the railway) world. Even one expects a decent picture on the wall to have a good frame for support.

North, South, East and West

by Ted Ward

One of the common ways of expressing the general whereabouts of railway features such as yards, branches, spurs, operating divisions and any other such railway feature with a geographical location is by the use of the compass points, north, south, east and west. The use of the terms north, south, east and west is really quite common in railway patter, among the workers, as well as among the management, and so as probably the most matter-of-fact method of expressing whereabouts, the use of the compass points is the generally accepted method.

Virtually every country on earth, including our own, has or has had a railway or railways with one of the compass points in its name, viz West Australian Railways and New South Wales Railways. In the USA, compass points abounded in railroad names, with the use of the word 'Western' bound to add a few points on the stock exchange. In fact, examination of a list of American railroad names revealed 11 of the major roads use the word 'western', while 'southern' is taken by 7, 'north' by four and 'eastern' by just two. Among the hundreds of smaller roads not considered, the same ratio probably applies. Across the Atlantic, the UK had its Great Western,

Great Eastern, Southern and North British, and across the Channel ran the Sud-Nord and other geographical railways.

Only a very few of the probably hundreds of instances have been mentioned here, and a full list would be interesting.

The use of compass points extends right through railway nomenclature and railway jargon, all the way down to the point where railway vehicles being overhauled in a shop have a north end and a south end. A typical workshop instruction is something like 'take the bogie off the south end', as most ordinary vehicles do not have anything to differentiate one end from the other. Using the compass point eliminates any need for any further discussion.

Workmen using overhead cranes, where the slingsman may be manoeuvring a bulky heavy load and the crane operator out of sight from him, sometimes just call out compass points as they manipulate and carefully place their huge items exactly in place on the workshop floor. One can sometimes hear the slingsman calling - 'north, north, north-east, east—OK, down'. Such is the familiarity with the compass points among workshop employees, and

such is the confidence expressed in each other by the use of those four simply words - north, south, east and west.

One of the ways a modeller can enhance the 'railwayness' or realism of his layout is to incorporate a little more railway jargon into his train room conversation. To do this, determine the north, south, east and west of your train room or layout and start referring to it in those terms. Pretty soon, trains will become 'northbound' or 'eastbound' or whatever, although common Australian and UK practice is to use the term 'down' for a train travelling away from a major station, and 'up' for a train travelling towards it.

It may be worthwhile to make four cards with the letters N, S, E and W on them and place them on the appropriate walls so that visitors can get their bearings. A prototype for this are the compass points often painted under the cross-beam of travelling cranes so that workmen can navigate their loads better.

Once one becomes familiar with the direction of north and south, etc, one will start referring to the 'north end of the yard' instead of 'over there', and yet another dimension will have been added to one's modelling.

The Pop Valve

The Editor
AMRA Journal
Dear Rex

I for one appreciated your VERY COURAGEOUS (Yes, Minister) publication of Phil Kelly's comment in the last March Journal No 195, page 29. I certainly agree with Phil's wisdom that - 'If the (Federal) COM is to move home, or anywhere else, it must be done not just for a change, but for a positive advantage for the Association as a whole'. But HOW are we poor ignorant members going to learn of a positive advantage?

When Phil was being there and doing that on the Federal COM, he helped to NARROW the publication guidelines for AMRA's magazine (see last July's Journal No 191, page 90). As a result, today, neither Phil himself, nor me, nor the rest of us flung out across Australia can now find out and/or learn of even just one positive advantage for keeping the Federal COM in NSW. Because support letters with all those sorts of Association ideas and reasons are not allowed to be published or discussed in the newly converted into 'model railways only' magazine.

John Reid
New South Wales

PS If Phil can show us how to make small printed circuit boards CHEAPLY, i.e. without the expensive kit for big multi-productions, then I am another reader who would also be interested in such a planned article.

.....
The Editor
AMRA Journal
Dear Rex

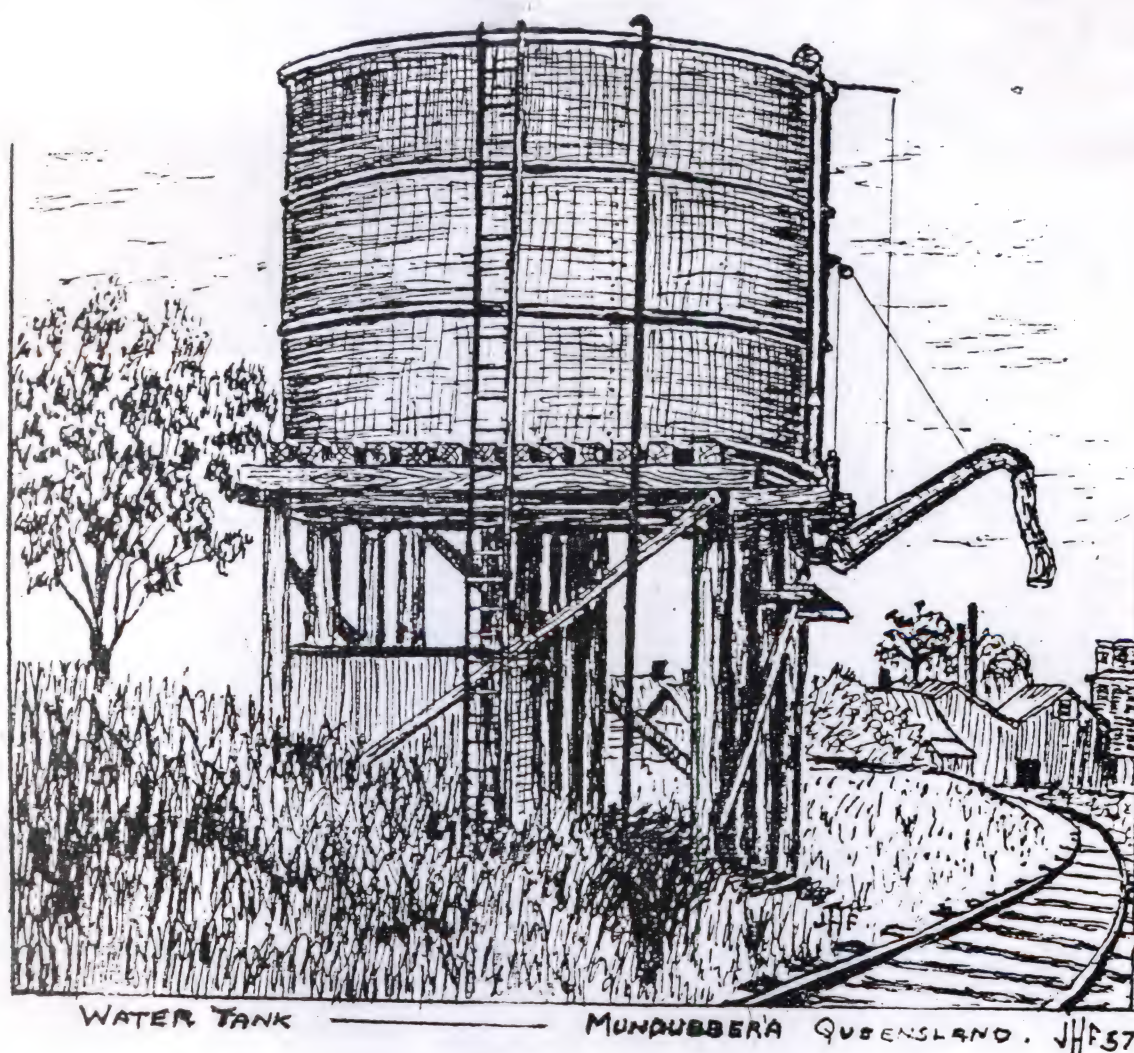
Ever since I joined AMRA 36 years ago, we have been at pains to "disperse the image by our words and actions...of model railways being 'grown men playing with toy trains'" (your Editorial, Journal No 195). The need for you to make this reminder suggests that we have made little progress. Should the battle continue? Personally, I can accept the fact that many of my trains were made as toys. This does not belittle them, to the consternation of us collectors, their value has increased to the point that we can't ill afford to buy them. I make no apology for the toys and models that I

collect and enjoy; from fine scale to tinplate, from N to 0 gauge. The public may be less concerned than we are about the size of wheel flanges and the scale dimensions of a coupling. Many of our members, and much of the public, cut their teeth on toys, and nostalgia is more popular and respectable than ever.

At exhibitions, we've all seen admirable fine scale slow speed shunting deserted to watch a speeded up tinplate express - the kids know full well it's a toy, while the oldies (if it's Hornby tinplate) are glued there by fond memories. While maintaining a great admiration for the master modellers, and marvelling at the exquisite standards of A'Beckett's Creek and East Mateland, I feel no need to be defensive about the trains I collect and run, and I suggest that for those persons whom you aim to convert, for those who wish to denigrate our hobby by dismissing it as playing trains; their poverty of interest is its own reward. Let them be.

Kindest regards
Robert Gorrell
New South Wales

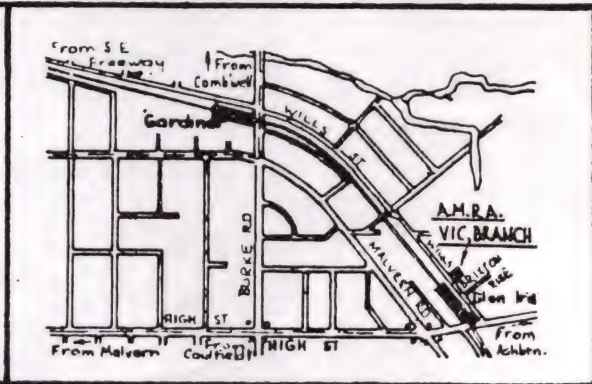
Jim Fainges of Queensland Branch is the artist who sketched this QR water tank back in 1957. In future issues we will be featuring more of Jim's work.



WATER TANK

MUNDUBBERA QUEENSLAND. JHF 57

STATE NEWS



President's Piece

Welcome to the May issue of Journal. You may have noticed that the days are now shorter and quite cool, a good reason to put some time into completing those projects you started last winter.

While Camberwell 90 is now history, I would still like to take this opportunity to thank those people who put so much effort into the exhibition. I feel quite sure we won't be operating five club layouts in the future. That was lesson number one, from now on it will be a maximum of three. On some days we were so short of people during the meal breaks layout operators were provided with emergency potties.

The exhibition itself was a success, however the numbers of people attending were down. I guess this is a reflection of the moment with people trying to make their dollars go further.

During the exhibition the operators of Kyneton were asked to test run certain items of rolling stock for various people. On one occasion Frank Kelly, model maker extraordinaire asked could he demonstrate a completed model of a NSWGR O(60) class 0-6-0 passenger engine for a client. So for two circuits an engine built for service in the Blue Mountains of NSW in 1874 hauled a 12 car Overland set without any difficulty. The owner, a gentleman from Katoomba was delighted. In addition, John Hamilton from ALCO loaned us a pre-production model of the VR T class for the weekend and it performed beautifully. I also believe that special mention should be made for the assistance provided by Graeme Brown in curing some ailing locos during the weekend. Many thanks Graeme.

A special mention should also be made for those who toiled long hours to complete the new back section of Kyneton. The people who saw the layout in operation were impressed, the operators inside were delighted as the new hand held controllers allowed remote control of trains, a very professional touch. Full marks to Graeme Nitz for that one. I would also like to thank all those members who provided their own rollingstock for use on the layouts. Without your assistance some of the layouts would have looked rather bare.

The next Working Bee is on 19th/20th May, the choice of day is yours. Also the 20th is Running Day from 1330 hours, so do your bit for the club in the morning and then run your train in the afternoon.

While the Association has a reasonable quantity of Australian rolling stock for use on the layouts, the operation of the Kyneton layout at Corio in January showed that at times there just isn't enough to go around. To rectify this situation we intend to purchase specific items each year as the budget allows. If you have any suggestions, or better still the time to put together kits such as the Broad Gauge Models AW/BW cars, then we would like to hear from you.

Moving to other matters it is interesting to note that at the end of 1989 V/Line regard the C,X,N and P class as the worst offenders for total disablements. These locomotives represent 40% of the fleet yet they form 70% of the failures. Head End Power failures on the P class is a major concern. Poor performance by specific locomotives incurring repetitive faults are: N451, N454, N459, C505, C508, C510, X35, X39, X42, P12 and P14. The HEP faults are related to design matters which are progressively being ironed out with various modifications.

Interesting to note recently that TNT Australia is urging the Federal Government to spend \$600 million upgrading the Melb-Albury standard gauge to run new generation freight trains up to 2 km long and at speeds of 160 kph. TNT is one of several freight forwarders holding talks with the Federal Government on a new national rail freight organisation.

Also a Federal Parliamentary Committee, the House Standing Committee on Transport, Communications and Infrastructure said in a report released at the end of November 89 that a single body take over all interstate rail services and that \$30 million in road funding be re-directed to improving the railways. The report also said that the national rail system paid \$1117 million in fuel excise in 1987/88 with \$30 million going to roads and virtually none to rail.

I note that Australian National is progressively scrapping quite a few locos from its fleet. The 500, 800 and 930 class being the major casualties. The sight of four or six 930's at the head of a freight into Melbourne will soon be just a memory. Get your photos/videos of 930's in Victoria now. Don't wait for Spring or you will miss out.

In the latest issue of RAIL AUSTRALIA (No.13) there is an article titled "The Grain Drain" which describes major changes in the movement of grain in South Australia. It seems Australian National is getting

out of the grain traffic which they say offers no return on investment.

Starting with the closure of the Gladstone Wilmington line AN have recently announced they will no longer transport grain by rail from Yacka, Brinkworth, Snowtown(hello Ern), Blyth, Bute and Hallett. This means that about 100,000 tonnes of grain will now be moved by road in these areas. The local people are very angry about having to cover the costs of ongoing repairs to the roads while the State's politicians have remained silent on the changes. I wonder what the future will be if AN takes over the operation of other systems.

In the same issue of RAIL AUSTRALIA is an article on the withdrawal of the Silver City Comet. Again a lot of local people are concerned about the loss of what they regard as part of their daily life. But in today's world of 'user pays' does this still apply. It seems the answer these days is usually no.

It would appear that the American consulting company of Booz-Allen & Hamilton have had a rethink on their recommendation that the State Rail Authority should withdraw from interstate freight traffic. In front of a Federal Government Inquiry into land transport Booz-Allen now claim interstate freight traffic is not as unprofitable as first thought.

Geoff Brown
President

Layout Visits

Victorian members please note the Agenda Item, LAYOUT VISITS, shown for July 15th 1990 has been deferred as it co-incides with the British Model Railway Association's Convention to be held on the same weekend.

It is hoped that LAYOUT VISITS may be included with the Association of Victorian Model Railway Clubs' Convention to be held November 10th - 11th 1990.

Also if you know of any layouts in the Melbourne metropolitan area we could visit, then we would certainly like to hear from you.

Social Night

This year our SOCIAL NIGHT set down for Saturday 23rd June is to be held at CHOO CHOO'S RESTAURANT, Monbulk Road, Emerald (Licensed & BYO). If you are a definite starter please let

Stewart Westerman know early. Keep a lookout for the LGB trains that run through the establishment.

Big Trains

In a recent issue of V/Line News a claim was made by the iron ore miners in WA that they operate the heaviest trains in the world (38,000 tonnes). The longest are supposed to be in the USA. However this must now be questioned as the South African Railways have recently run a 660 car train weighing 71,600 tonnes and 7.2km long from Sishen to Saldanha Bay, a distance of 830km. The trains average speed was 37.9km/h with a maximum speed of 80km/h.

Motive power for the train was five Class 9E electric locos (4900hp) at the front, another four 9E's cut in after 470 wagons. At the rear further power was required, but as the overhead was already pushed to its limits, this was supplied by seven Class 37 diesel-electrics (2900hp).

The South African Transport System now claims world records for the heaviest, the longest, the greatest number of wagons, the longest non-stop heavy haul run and the highest average speed over the distance.

RAIL AUSTRALIA-FEBRUARY 1990

Double-Deck Cattle Waggon

Displaying a sense of humour not common in these days of serious profit making, Australian National have given names to five new double-deck cattle wagons. They are as follows:- ACCF 3231 Remov-a-bull, ACHY 1743 Stack-a-bull, ACHY 1744 Dou-bull-decker, ACHY 1745 Multi-bull-transport, and ACHY 1748 Transport-a-bull.

RA--Feb 90

Turning a Full Circle

To help keep up with the demand for seats on country trains a sleeping car was recently converted to a sitting car at the Newport Workshops.

Before conversion the car was used on The Vineland to Mildura.

Since being built in 1940 as a compartment sitting car (6BS), the car has had an interesting history.

In 1962 it was converted to a composite car (VAC2) with part sleeping and part sitting accommodation for use on the Melbourne section.

Then in 1982 it was converted again, this time to a full sleeping car, becoming SS286 and returning to broad gauge.

Now the wheel has turned a full circle, and its new guise as BS219, the carriage will see a new future as a sitting car.

GHB

General Notes

March Meeting

No meeting held as it was setting up night for the Camberwell Exhibition.

April Meeting

The agenda item being clinics, covering maintenance of model locomotives.

Bill Secker conducted a clinic on Lima locos.

Graeme Nitz conducted a clinic on Athearn locos.

Rob Bogie conducted a clinic on brass locos.

Models for Display

G Nitz - ALCO model climax 0 gauge - can be altered for ON2, ON2-1/2 and ON3 gauges (\$1100).

R Bogie - Flexivan flat car of NYC - maintained by AGIN for Overland Models. USA.

- BEMO-Swiss private NG line - Rhatischen Bahn class Ge 4/4II - Bo-Bo 2300 HP electric loco.

- BEMO-Rhatischen Bahn Tm 2/2 50 HP diesel mechanical shunting loco.

- Rivarossi corrugated coaches - NYC diner and coach

J Gardiner - Roundhouse 50' Pullman - converted into a VR ABC circa 1880 old suburban carriage.

Award Presentation

John Hamilton of ALCO models presented a VR Walker railcar (unpainted) to the President for the Victorian Branch. This being the prize for the best Club layout at the recent Camberwell Exhibition.

The President of the Victorian Branch presented to Ron Roberts the award for the best layout at the recent Camberwell Exhibition as voted by the public. The layout being Twin Hills.

Competition

Models - Open Standard

Trevor Reeves - BGM AW car 88 points

John Harry - USA log wagon 85 points

Photo - Water Crane/Tower

Print - A Jenkinson - Corowa water tower 88 points

Slide - G Attril - Queenscliffe water tower 89 points

Working Bee

To be held on Saturday and Sunday 11 and 12 August 1990.

This being a very important bee as it is just before the open weekend at end of August and the Clubrooms and grounds will need to be tidied up for this event.

Open Weekend

To be held on Saturday and Sunday 25 and 26 August 1990.

The COM wishes to hear from people willing to supply stock for operation and display, as well as from people willing to assist in manning this event.

Auction Night

To be held on Thursday 12 July 1990

Items for auction must be handed in (together with the paper work) before 7.30 pm. Any items not handed in by 7.30 pm will not be included in auction. This is to try and prevent a repeat of last year's night which finished very late.

Commission on items is the same as last year, i.e. 10% of 'knock down' price for sold lots (with no maximum limit), and 10% of 'final bid' price up to a maximum of \$1 on unsold lots.

Annual General Meeting

This will be held on Thursday 13 September 1990.

Nomination forms for the COM will be available from the Secretary shortly.

Model Prizes

As reported in the January/February 1990 issue of Journal, prizes are being

given for the monthly model competition. This is to try and increase the number of models being submitted which has fallen dramatically over the last couple of years. The prizes are \$10-\$15 orders on Train World, Engine Shed, Branchline or Buffer Stop.

Members

Manfred and Carmen Ebinger have a new arrival - a boy, Michael Peter, born 31 March 1990. Manfred has been anxious to purchase him his first model.

Peter England and wife Dorothy have gone on a three-month tour of England. While over there, Peter is hopeful of obtaining a good deal of information on 'Brent - South Devon', which he intends to model as a layout.

Layout Visits

Which were to be held on 15 July have now been cancelled.

Association of Victorian Model

Railway Clubs

The Victorian Branch has agreed to present four topics/clinics at the November convention. These clinics are to be approximately of 50 minutes' duration (including question time). The presenters can choose their choice of topics. Please contact Jack Treseder (telephone 874 3953) if you are willing to present a clinic.

Program

JUNE

2	Sat	Junior Day - your equipment	10 am - 3 pm
3	Sun	Timetable operation - USA prototype	1.30 - 5 pm
4	Mon	Weekday working bee and operation - your equipment	10 am - 3.30 pm
14	Thur	Social Meeting Wiring Technique - G Nitz	

Model - Open standard categories
Photo - Overhead footbridge

17	Sun	Running Day - your equipment	1.30 - 5 pm
18	Mon	Weekday working bee and operation - your equipment	10 am - 3.30 pm
23	Sat	Social Night - BYO restaurant - 7 pm	(Choo-Choos)
28	Thur	Timetable operation - USA prototype	7.30 - 11 pm
30	Sat	Junior Running Day - your equipment	10 am - 3 pm

JULY

1	Sun	Timetable operation - UK prototype	1.30 - 5 pm
2	Mon	Weekday working bee and operation - your equipment	10 am - 3.30 pm
12	Thur	Social Meeting - Auction night - 7.30 pm	

Model - Australian or other kit
Photo - Upper quadrant signal

16	Mon	Weekday working bee and running - Your equipment	10 am - 3.30 pm
26	Thur	Timetable operation - USA prototype	7.30 - 11 pm

AUGUST

4	Sat	Junior running day - your equipment	10 am - 3 pm
5	Sun	Timetable operation - Australian prototype	1.30 - 5 pm
6	Mon	Weekday working bee and running - Your equipment	10 am - 3.30 pm
9	Thur	Social Meeting Flash your five favourite slides	

Model - open standard categories

Photo - Clubroom layout
 11 Sat Working bee - 8 am
 12 Sun Working bee - 8 am
 Further information next issue

1990 Camberwell Exhibition

I would like to thank the exhibitors and members who assisted in the presentation of the Exhibition at Camberwell. I would also like to thank the ladies and gentlemen who helped Elizabeth with the meals. After running the kitchen for six years, Elizabeth has decided it is time for a change, and Carol Jenkinson has agreed to take over the catering. On behalf of the Exhibition Committee, I would like to thank Elizabeth for a job well done over the years, and also to thank Carol for accepting the responsibility of the meals. I am sure she will get all the help required to do the job.

The 1991 Exhibition will be held as usual at the Camberwell Civic Centre from Friday 8 March to Monday 11 March, inclusive, with set-up on Thursday 7 March. It is pleasing to report at this stage that we have received several applications from interstate and locally with new layouts for '91.

The following Awards were made:
BEST PRIVATE LAYOUT
 Twin Hills - Ron Roberts
BEST COMMERCIAL DISPLAY
 The Marklin Bus - Bill Silvester
BEST SOCIETY OR GROUP DISPLAY
 AMRA Kyneton Layout
BEST DISPLAY BY PUBLIC VOTE
 Twin Hills - Ron Roberts
 Opening Modelling Competition results were as follows:
WINNER AMRA CUP BEST MODEL
 Frank Kelly - VR 2-4-2 Tank Loco
BEST LOCOMOTIVE
 Frank Kelly - VR 2-4-2 Tank Loco
BEST ROLLING STOCK
 Passenger - Frank Kelly - VR AB Passenger Car
 Freight - Frank Kelly - VR D Van
BEST LINESIDE STRUCTURE
 Peter MacDonald - Bacchus Marsh Water Tank
BEST JUNIOR MODEL
 Martin Hocking - Puffing Billy NVW1 Trolley and Trailer
FYFE THORPE AWARD BEST AUS-

TRALIAN PRODUCED KIT

Peter MacDonald - VR BCE Composite Car

Bob Edwards
 Exhibition Manager

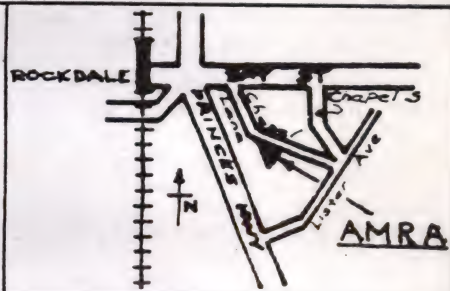
For Sale

**BGM Brass 'C' steamer
 2-8-0. Factory painted.**

Excellent condition

\$900.

**Ring Bill Secker
 541 7273 during
 business hours**



N Scale Report

or

The Easy Way to Get Things Done

Isn't it wonderful when one can be away from a project so much, as yours truly has been lately, and it ploughs ahead under its own steam and you can still write about it as if you had been integrally involved? For example, I was definitely part of the completion of the new turntables on the mainline stations at Wallamudra and Bownen, while Dave Bennett just looked on. And I played a significant role in the fact that the layout is now completely surrounded by masonite fascia board, while Dave and John Lischeld sat around and drank tea. And the completion of both the point wiring and the blocking of the whole double mainline was due in absolutely no part to Dave or Neil Watson. And the Ladies Auxiliary had only a little to do with funding the beautiful new cupboards that now grace the underside of the Wallamudra frontage. And Neil was just sipping ginger beer when I moved one of the legs of the layout to fit one of the cupboards in!

Yes, it's tiring doing all the work yourself. And while all this has been going on, the scenery is just sitting there waiting to be done! Now who's the lazy bludger in charge of that?

Glenn Watson

Talking of things getting or not getting done - what is happening in the rest of NSW Branch? Managing Editor

Growth in Passenger Traffic

V/Line is anticipating further growth in passenger traffic. The present state government has indicated that in the short term it will not replace whole passenger services on any lines with buses. Only some 10% of all passengers using V/Line services currently pay full fares. Future passenger services will be provided by V/Line under a contract arrangement and the government 'will pick up the tab'.

GHB

Push-Pull for Victoria

Due to maintenance difficulties caused by frequent coupling and uncoupling, push-pull operation of H sets is being considered. This is now being done with at least one six car set and a P class at either end.

GHB

The Hon D J Hamill, Minister for Transport and Minister Assisting the Premier on Economic and Trade development has invited all persons to make suggestions on improving rail passenger traffic in Queensland.

Anyone with something to say should write, in a private capacity, to the -

Study Manager

PO Box 673

FORTITUDE VALLEY Qld 4006

Queensland Loco Hauling Contest

Continued from page 56

lifted is given as the percentage of locomotive weight.

The winners were as follows:

S Malone - steam loco with traction tyres - scratchbuilt QCR Beyer-Garratt, lifted 252 g, percentage of loco weight - 31%

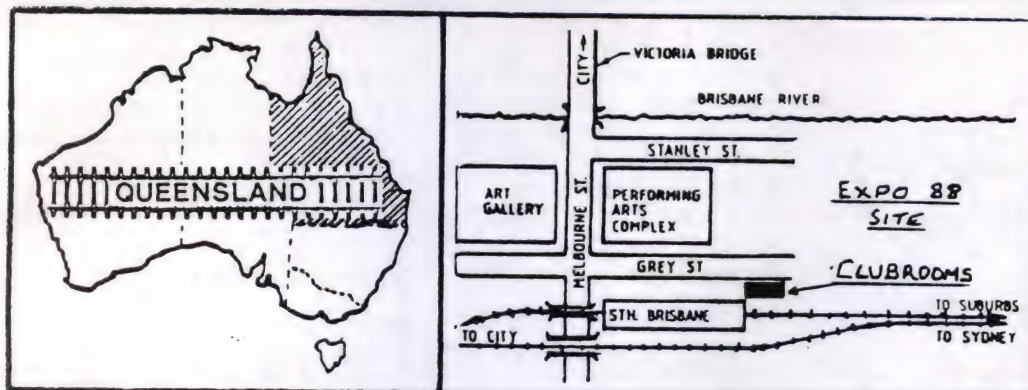
T Weber - steam locomotive without traction tyres - semi-brass Union Pacific USRA 2-8-2 at 78 g, percentage of loco weight - 15%

P Parkinson - diesel electric loco with traction tyres, double motored VR G class Co-Co by Powerline lifted 200 g, percentage of loco weight - 43%

T Weber - diesel electric loco without traction tyres - Athearn SD40T-2 Co-Co at 219 g, percentage of loco weight - 35%

Congratulations to all the winners and participants. Thank you all for trying. It is really worth the effort to fine tune a loco, clean the wheels, adjust the brush tension, eliminate the burrs and hiccups and participate. Only one person can win each category, but you will have a chance to see how your best loco compares 'out there' in the real world.

Add some weight to increase adhesion, but, please, not too many house bricks



THE GREEN BOARD

President's Piece

As many of the Queensland members of AMRA are aware, the Queensland Division of the Australian Historical Society has undertaken to restore to operational order the Class A10 0-4-2 steam locomotive which until recently was displayed at the QR Museum at Redbank, about 20 kilometres from the Brisbane GPO. To raise funds for the project, the ARHS has offered a free ticket on the first trip of the restored A10 to any individual or group who donates \$100 or more towards the restoration. The restoration is planned to be completed by July, in time for the 125th Anniversary Celebrations of the Queensland Railways. The AMRA Queensland Committee of Management has donated \$100 from Branch funds towards the project, and thus the Branch is eligible for one ticket. Once the ticket for the first trip is available, we will hold a lucky draw among our Branch members. There is only one requirement of eligibility for the lucky draw and that is, if you wish to be in the draw, you must be in the door, i.e. be present in the Clubrooms at the time of the draw. As soon as the ticket is on

hand and the date for the trip is announced, there will be an immediate mail-out to keep our members informed.

We have been approached by Queensland Railways once again to build them another layout. Several months ago, they came to us with their proposal, but they wanted the layout built in Rockhampton, 639 kilometres from Brisbane. The layout is to represent all styles of safe working procedures used on the QR and is to be used to train QR staff in using the various styles of safe working procedures used on Queensland Railways. Approximate dimensions will be around 10 metres by 9 metres and will be built to HO scale using Marklin track and locos. I believe the choice of Marklin has something to do with Marklin's new control system. We will be responsible for the track laying and scenery only, QR's carpenters will do the layout bench work while their electrical staff will do all the electronics. QR would like to have us start mid May and have it completed by October. At the time of writing this, the powers that be would like the layout built up at Redbank Workshops, but because of the distance out of town and the short period of time allowed for construction, we have

asked if we can use the room above the main entrance to South Brisbane railway station, quite close to our present Clubrooms. The proposed room is vacant at the present time and is large enough to build the layout. Hopefully, QR will agree. Work on the Club layout will have to stop while this latest project is underway, but, like the Club layout, I hope that all the suburban members will become involved in this commitment.

I'm pleased to report that Harry Parkes has found a gold spike (EUREKA!), so we've decided to hold a Spike Driving Ceremony on the evening of Saturday 17 July 1990. This evening is to be a family evening, so bring the wife and kids, and a casserole too!

A full report with the details of the successful 1990 AMRA Model Railway Exhibition will be included in the next issue of Journal, but at this time, suffice to say my sincere thanks to all those people who helped out at the Show and a special thank you to the ladies who once again did their usual excellent job.

Until next time, best wishes and good modelling.

Bob Mawson

AMRA Queensland Conducts Loco Trials

by Tony Weber and Ted Ward

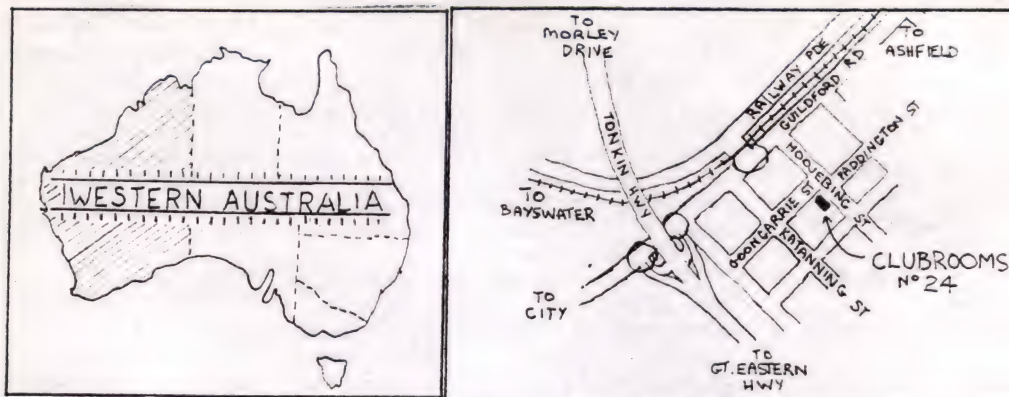
At the February 1990 general meeting, AMRA Queensland held its annual trials. As the trials were to be made using probably less than 30 locomotives submitted by members, it was decided that a simple 'brute force' test, using weights in a bucket would be adequate for the tests.

A scientific approach was adopted by dividing the locos into the usual categories of steam with and without traction tyres, and diesel and electric outline locos with and without traction tyres. The locos didn't actually compete against each other as in a weight lifting contest, but rather, were evaluated on a power/weight ratio basis. The locos with the best power/weight ratio can be deemed to be the best, as obviously, different scale locomotives can have different sized motors, different methods of power transmission and a lot of other beneficial features, such as additional weight per body size and better transfer of power to more wheel sets than, say, a small scale locomotive.

Four categories were decided upon, as mentioned above, and the complete results are shown below with full details of mass, drawbar pull and the percentage as a power/weight percentage, where the weight

Name	Loco	Traction Tyres	Wt loco (g)	Wt hauled (g)	% as loco wt
Steam					
S Malone	Mantua 2-6-6-2	Y	395	59	15
	D17 4-6-4T	Y	462	127	27
	Garratt 4-8-4+4-8-4	Y	823	252 (1)	31
	B15 4-6-0	N	383	20	5
N Johnman	DD17 4-6-4T	Y	429	60	14
E Ward	Hiesler (Rivarossi)	N	258	39	15
R Mawson	Ma+Pa 2-8-0 43	N	466	69	15
T Weber	UP 2-8-2	N	523	78	15
Diesel and Electric					
R Bailey	Jouef BoBo SNCF 6500 Electric	Y	280	68	24
P Parkinson	Powerline Twin Motor VR G Class	Y	467	200 (3)	43 (1)
S Malone	QR 35 Class Electric	Y	7339	140	19
	QR 1400 Class BoBo	N	284	79	28
T Weber	Atlas RS11 BoBo	Y	375	101	27
	Athearn GP38-2 BoBo	N	391	80	20
	Athearn SD40T-2 CoCo	N	624	219 (2)	35 (3)
D Warn	AR SRA81 CoCo	N	670	134	20
R Mawson	Model Power FA2 BoBo	N	456	101	22
B Shelberg	Athearn SD40-2 CoCo	N	430	159	37 (2)
B Hoppit	SRA 40 Class CoCo	N	318	68	21
S White	Athearn SD45 CoCo	N	468	130	28
	DB DH 0-6-0 (Fleischman)	N	288	40	14
	Athearn GP38-2 BoBo	N	378	119	31
W Geddes	Athearn SD45 CoCo	N	471	128	27
G Wright	QR 1600 Class CoCo	N	413	80	19
	QR 1460 Class CoCo	N	528	110	21
	QR 1550 Class CoCo	N	631	70	11
	QR 1450 Class CoCo	N	669	198	30

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Extracts from 'The Branchline'

1990 Model Railway Exhibition

Just because this item in this issue is fairly short does not mean that the 1990 Model Railway Exhibition is going to be a trivial affair. Graham Watson's sub-committee has lined up 14 operating model railways (even after a couple of cancellations!) which is as large a number of layouts as we have ever had. Add to these, the 'kindred' societies (such as ARHS, Castledare, Bennett Brook Railway, etc), six (at the last count!) traders, the live steam train rides and you can see that we've got a pretty large exhibition!

As already reported, the Exhibition has to be accommodated this year in two pavilions in the Claremont Showgrounds (the Wool Pavilion and the Arthur Wilkinson Pavilion), which is a little awkward, but we believe we can manage the movements of the visiting public between the two halls quite efficiently.

The Management Committee, supplemented by Graham Watson, has now got most of the planning for the Exhibition under control, all the items listed in my last report which at that stage had not volunteered for them are now assigned to someone in the Branch, apart from the print media advertising design and placement. An up-to-date version of the Master Plan, detailing all the items which have to be attended to, is on display on the Club Notice Board so that members can see who's doing what and when - this will enable them to spot anything we've forgotten about (I hope there are no such items), as well as knowing who to contact should they wish to volunteer in an area already assigned.

In my letter accompanying this issue, I have outlined four ways in which every member of the Branch can assist to make the 1990 a great and resounding success - I am confident that this assistance will be forthcoming.

So, TELL YOUR FRIENDS AND NEIGHBOURS ABOUT THE EXHIBITION and bring your family... see you there, as a helper or a visitor.

Ted Thoday
President

Branch Secretary

The Management Committee has accepted an offer by Garry Pilmoor to assume the position of Branch Secretary until the Annual General Meeting. Thank you, Garry, for becoming even more involved in the Branch management.

Ted Thoday

Layouts Report

Haltwhistle is progressing towards its exhibition format. Much work has been done on the fiddle yard, with only some wiring to complete. The main line centre section is now finished and is capable of running HSTs, such is the quality of the track laying! The entire layout has been 'zip textured' restoring colour to the previous drab scenery. It now remains to replace vegetation, buildings, population and signals to put back some realism.

The Management Committee expresses its thanks to those members who have worked so hard to upgrade Haltwhistle towards exhibition standard. It isn't much fun to crouch under a layout in our summer with the heat of spot lamps, but those who did are appreciated.

The Branch has a substantial quantity of 2 mm stock and half a layout. At my last count, there were 27 modellers in the Branch ranks interested in this scale. We would welcome some of you (if you are one of them) coming forward with the intention of resurrecting the Colorado and Pacific. The terminal section will be retained as a viable half layout and we would welcome some constructive ideas as to the construction of a new 'other half', with the intention of making the whole an exhibition layout for the future.

Roger Solly
Layouts Manager

The Exhibition

by Andrew Morling

It was the yearly Exhibition of the Model Railway Club

And I said I'd go along instead of going down the pub.

I offered them my layout and they said it looked okay

And if they made a profit I might even get some pay.

I said I'd fix the scenery and get the wiring right

And I guaranteed I'd be there setting up on Friday night.

Then I looked around the layout, picked out all the things to do,

I listed them in order and it came to 52. I'll need a few more buildings and I ought to make some trees.

It will end up as a layout that is 'guaranteed to please'.

And so I worked away each night 'til everything looked fine.

The streetlights worked, the trees looked right, the trains stayed on the line.

With two days left to go I thought I'd separate the tables,

But when I tried I found I'd have to redo all the cables.

I'd always called it 'portable' and bragged that I could move it,

And now at last the day had come when I would have to prove it!

I worked 'til after midnight cutting cables, fitting plugs,

Underneath the baseboard with the spiders and the bugs.

On Friday night we loaded up to take it to the hall,

I was sure I'd got a trailer big enough to hold it all.

It wouldn't all fit in, but then, it wasn't very far,

So I thought I'd put the last bit on the roof rack of the car.

Although it looked a bit like rain, I didn't heed the warning.

But then it's only slightly wet and should be dry by morning.

We made our way into the hall to set up in our corner

'Don't drop your end', 'I've lost the bolts', 'Did you bring the transformer?'

'This bit won't fit', 'The floor's not flat', 'The track's not getting power'

'And someone said we have to leave the hall in half an hour'

At last we got one single train to run around the track

And knew that it would be alright next day when we came back.

And then for three long days we ran the trains and had a ball,

As 7000 people made their way around the hall.

From babes in arms to Grandads, some were curious, some bored.

The tall ones and the short ones, the thin ones and the broad.

Some who looked and moved along, some of them stayed

Little boys with sticky fingers climbing through the barricade.

Each night I staggered home and fell into a fitful sleep

To dream of trains derailing with the wagons in a heap.

Of barricades collapsing under swarms of little kids,

And promising myself that I won't go back there for quids.

But early in the morning you find me

rushing back,
To tidy up the scenery and clean a bit of track.

At six o'clock on Monday night is when the whole thing ceases.

It's time to pack away the trains and pull the boards to pieces.

But this time there's no caution, we don't handle it with fear,

'Cos we're going to build a new one twice as big by June next year.

And when I get it home I slowly stack it in the shed,

And then I go and throw myself in silence on the bed.

That's when I find a program and I slowly wander through it.

I think about the weekend and I wonder why I do it.

I think about the effort and I feel the aches and pains,

I think about the damage to the layout and the trains.

But I see the smiling faces of the children and it's then

I know that I'll go back next year and do it all again.

Library Notes

Another two months have gone by and the Library has been well patronised by many members. We have been visited by some of our country members and also city members for the first time since we moved to 24 Moojebing Street and their comments have been much appreciated.

Gus Durham, with help from Rex Vellender, has now caught up with and passed the target for new magazine storage boxes so we can now start replacing some of the older damaged ones. Les Bovey and Harry Vosper have been checking magazine boxes to ensure that the magazines are in chronological order and with the spines to the rear of the boxes. Borrowers and users PLEASE NOTE and try to keep the magazines in order. We have had books and/or magazines donated by Ted Thoday, Des Edwards, 'Nobby' Clark, Alan Parrott, Alan Porter, Andrew Wells and Gus Durham. thanks to you all - these donations will all be on the shelves by the time that you read this.

The various plans and drawings have not yet been dealt with, but they have not been forgotten. I haven't yet worked out how to store them properly when they have been catalogued. Any ideas??

My wife, Jane, has been busy covering more books and all new articles are being covered before they go up on the shelves. This should extend the lives of most of our books indefinitely.

A reminder on Library loan policy - books and magazines may be borrowed for ONE MONTH ONLY and videos BETWEEN TWO MEETINGS. A charge will be made for overdue items in most cases!

Happy reading.

Barry Keens
Librarian

'Aorta'

Aorta do this, aorta do that!

How many times has this been said in most clubs, whether they be associated with model railways or with almost anything else - the Western Australian Branch of AMRA has been no different. The membership generally thinks that the elected Committee has no idea of what, they, the members really want!

Well, whatever the views which may be held by Branch members, there isn't much scope for the 1989/90 elected Management Committee of the Branch to do (or acquire) very much before the Annual General Meeting in three months time, because there isn't much money left in the kitty after the effective completion of the new Clubrooms project and until there is (hopefully), a cash flow from the 1990 Model Railway Exhibition. The current projection through to the Exhibition indicates that there will only be about \$300 left after the so-called essential expenses (such as paying the electricity bill!).

However, after the 1990 Model Railway Exhibition, it may be 'a new ball game' (depending on the financial outcome of the exhibition) and to give the new Management Committee, that will be elected on 2 July, some guidance, members are invited to put forward their ideas of what they would like to see at the Clubrooms. This can be done by entering the idea on the sheet of paper on the Notice Board at the Clubrooms or by telling one of the present Committeemen what you have in mind. If possible, have your idea costed, give an idea of the need (including the financial payback period, if possible) and the urgency for it.

In any case, ideas will have to be 'sponsored' at Committee level by one of the elected Committeemen when the relative urgencies of the various ideas are discussed, so it is wise to lobby one of the Committeemen with your ideas anyway. Ideas so far tabulated are as follows:

Consolidate car park - asap	\$5000
Heavy duty vacuum cleaner - asap	\$300
Three pedestal fans - before 90/91 summer	\$300
63 cm TV set (to repair video player) - asap	\$300
8' ladder - asap	\$150
Lino in meeting room near coffee bar - asap	\$100
Additional book shelves - about 11/90	\$200
Standing and sitting figures for 00 layout - asap	\$200
Road vehicles for 00 layout - asap	\$100
New transformer for 00 layout - asap	\$250
Gutter/downpipe on entry porch - before winter 1990	\$150
10 chairs - asap	\$200

Ideas need not be restricted to 'improvements' such as the above, but may include thoughts on additional books/magazines for the Library, additional stock items for Paddington Market, etc.

AORTA1...THEY (the members) OUGHT TO tell the Committee what they want!

Fly on the Wall at the Management Committee Meetings

He's not named 'Louie' (thank goodness), but he has been keeping an eye on what's said and done at the monthly meetings of the Management Committee over the past three months. Some of the things he would have wanted to report on have already been covered elsewhere in this issue of The Branchline, but there were a number of other items of which members should be aware. So, here goes!

January

Estimated cash surplus at start of Exhibition, approximately \$650.

Need for a step ladder identified.

Management of Sales by Branch discussed and clarified.

February

Estimated cash surplus at start of exhibition, approximately \$575.

Need for additional chairs identified.

Harley Nichols producing stickers for sale at Exhibition.

SECWA electricity tariff to be queried.

Constitutional aspects of filling Committee vacancy noted.

Need for a heavy duty vacuum cleaner identified.

Hat and coat rack to be installed in corridor.

Work to complete ladies' toilet identified.

March

Constitutional aspects of vacancies on Management Committee discussed.

Estimated cash surplus at start of Exhibition, approximately \$300.

Need for replacement of TV screen in 'Nickelodeon' noted, video cassette player being okay.

Need for additional figures and vehicles for Haltwhistle noted.

Lack of Branch owned tools noted, as well as poor storage of same.

Concern about organisation of formal meetings, especially those with an entertainment component.

Annual General Meeting

Early warning - this year's Annual General Meeting will be held on Monday 2 July at the Clubrooms. Make a note in your diary (or fridge door, or where ever) to be at this important meeting, come and have your say in the running of the Branch. More importantly, be prepared to volunteer your services on the Branch Management Committee - please do not take it for granted that the present members will be available for another term!!

Ted Thoday

Branchline Editor's Scrapbox

No sooner had the last issue appeared than I had a letter from former Branch 'character' Ken O'Shea, whose resignation from AMRA and the Branch was reported in the 'Scrapbox' on page 38 of that last issue. The letter from Ken advised that he has now reconsidered his position in the UK and has decided to return to Perth. He will be arriving about 26/27 May and would appreciate any help with initial accommodation (for about a week) until he can find

a place to rent, which is also suitable to hold his 'Missabe, Duluth and Cripple Creek RR (which is coming back from the UK too!). If any AMRA member can put Ken up for about a week (at the most), they can get more details and information from Dennis Ling, 245 Anzac Terrace, Bayswater (telephone 378 2509) - incidentally, Ken is travelling alone for those who do not know his situation. Welcome back, Ken.

Tears of Tizer are being spilled by old (in 1990, literally old) train spotters from the 40s, 50s, 60s and 70s - these are, of course, in decreasing degrees of 'oldness'! - with the news that the Ian Allan organisation will no longer be publishing their ABC series of books/booklets giving all sort of detail about locomotives, coaches, EMUs, DMUs, HSTs, etc. in service, locomotive head codes, Shed Codes and so on and on! The first ABC was produced by young (at the time) Ian Allan in the 40s and was the genesis of his now considerable publishing empire. All is not lost, though, for the Platform 5 organisation will be producing their pocket books on motive power, coaching stock, DMUs and EMUs twice a year in future.

Program

JUNE

1 Fri Set up Railway Exhibition

A day of steady work, broken down into four 'shifts', by as many volunteers as we can get, in order to set up the Branch's Model Railway Exhibition. Report direct to the person(s) in charge in the Wool Pavilion at the Claremont Showgrounds when you arrive, so that you can be slotted into an existing team at work or you can be given a completely new job to get stuck into.

2 Sat 1990 Model Railway Exhibition

3 Sun 1990 Model Railway Exhibition

4 Mon 1990 Model Railway Exhibition including takedown of exhibition

THIS IS IT, our three great days of the year. Put on a show they'll GLADLY remember until June 1991!

Don't forget that we'll need some extra help after the Exhibition closes at 5 pm on Monday. We have to dismantle all the barricading, the ticket boxes, the Advice Centre, collect all the signs, gather up all our bits and pieces and clean the pavilions out properly before we go home - otherwise, someone will have to come to the Showgrounds on the following morning and there usually aren't too many 'someones' to be found at that time of the week!

9 Sat Housekeeping at the Clubrooms

Well, we dumped everything on Monday night (or was it Tuesday morning?) - now we can put it all away properly.

13 Wed General Club Activities

On these occasions, you can bring along your own equipment to run on the layout (assuming it's not being worked on!) or you can use the Library for browsing or for borrowing or you can chat to other railway enthusiasts (model and prototype) and exchange views. And, of course, there'll still be some TASKS left over from the Task Attack Days if you're a workaholic!

18 Mon Practically Yours - WAGONS

We made TREES 'in workshop' in April. Tonight, bring along some tools and

your favourite wagon kit - and make it in company with others doing the same. Remember, this is a WORKSHOP SESSION, not a demonstration or a talk.

23 Sat General Club Activities

27 Wed 1990 Model Railway Exhibition post mortem

Tonight we'll hear how things went and then each of us can offer comments on what (should have??) happened at the Exhibition and how we can improve things for 1991 and beyond.

JULY

2 Mon 1990 ANNUAL GENERAL MEETING

Early advice of the AGM to be held, for the first time ever, in the new Clubrooms. Formal advice and the necessary paper work will be in the next issue, but, in the meantime, you should prepare yourself to a comment on the affairs and the conduct of the Branch, and

b if you think it's time for a change, volunteer for President, Vice President, Secretary, Treasurer or Committeeperson. It helps if you can get someone to nominate you, but you CAN nominate yourself. However, do not forget a seconder!

7 Sat General Club Activities

11 Wed Slide Night

Bring your slides along and explain them to us, as well as showing them - we might even run a contest for the most popular slide.

16 Mon General Club Activities

21 Sat Bring and Show

Bring IT, and Show IT...whether you made it, or tried to make IT, bought IT, inherited IT, weathered IT, mucked IT up, converted IT from a 'sows ear' to a 'silk purse' (or vice versa) or if IT fell off the back of a truck - bring IT along, show IT to other members and talk about IT for a few minutes.

All meetings will be held in the Clubrooms, 24 Moojebing Street, Bayswater, right opposite Paddington Street. Moojebing Street runs off Guildford Road towards the Swan River about 50 metres east of the traffic lights opposite the Cresco fertiliser works.

The times of the meetings are as follows:

Mondays and Wednesdays	8 pm
Saturdays	2 pm

The Duty Committeeman will open the Clubrooms at least 15 minutes earlier than the times given above. Visitors are always welcome to come to the Clubrooms at any of the scheduled meetings - just introduce yourself to the Duty Committeeman (ask someone there who he is!) and he will make you really feel 'at home' by showing you around the facilities at the Clubrooms (which we think are the best of any model railway club in Western Australia) and by introducing you to some of the members present.

Members' fees at meetings are as follows:

Senior members	60 cents
Student members	30 cents

This covers tea, coffee or Milo, plus biscuit and also goes to cover some of our general operating expenses (for instance, electricity is now costing us nearly \$9 per week!). Cool drinks are also available at a modest cost from the refrigerator.

No fee is payable if you are a visitor...unless you keep coming week after week without joining up!

Book Reviews

Window on the Great Western

by Mike Yarwood

Wild Swan Publications

pp94

280 mm x 218 mm

ISBN 0 906867 72 2

UKL11.95

The author has an enviable reputation for his photography of the railway scene. This is a pictorial book with extensive and informative captions. The photographs are excellent and cover the period from 1932 to 1949 (with a gap between 1940 and 1945 due to a total ban on railway photography during the second world war). The photographs are arranged with either one or two photographs per page, plus two which take two pages each.

The large photographic size, combined with the photographic quality, shows a wealth of detail, not only on the main subject of the photos, but in the background as well.

A must for the bookshelf of anyone with an interest in, or modelling, the Great Western.

(Your reviewer's copy of this book was obtained from Cove Models, 44 Cove Road, Farnborough, Hants, GU14 0EN, England.)

BET

Bridges for Modellers

by L V Wood

Oxford Publishing Company

pp144 300 mm x 205 mm

ISBN 0 86093 226 5

UKL12.95

Photographs and sectional drawings of various styles, shapes and sizes of bridges over and under railways in Britain. A few pages are dedicated to describing the construction of prototype bridges, the reasons for and locations of bridges and certain minimum dimensions. This book has excellent photographs, many by the author, which show much detail, not only of the bridges described, but of their location in the overall scene.

Underbridges and overbridges, together with footbridges, take up most of the book, with a smaller section on culverts, tunnels and 'others'. The book is aimed at railway modellers and the author is one himself, but it is disappointing that only two pages at the end of the book show five model bridges on model railways.

Certainly, most model railways have one or more bridges incorporated and perhaps some of those shown in this book could well be 'scratchbuilt' to fit into a particular model. The author does describe bridge locations and the railway companies involved, but I feel that the modeller would get better value and the same ideas from the bridges featured in 'model' books and magazines.

BGK

Locomotive Hauling Contest

The locomotive hauling contest was held on 24 March, the very same day as a nationwide contest was also taking place (AMRA had 'booked' the day first, but a double booking could not be avoided due to the might of the other party!).

First locos on the Dynamometer MkII were two identical Hornby LMS Jinty 0-6-0Ts, which had been labelled A and B. It

was noted, however, that the former bore a blue disc on its smokebox door marked 'Andrew' and the latter had a similar red disc on its smokebox door marked 'Bob', both looking a little like Thomas, the Tank Engine - although some wag suggested they were more like 'Tweedle Dee' and 'Tweedle Dum'! Both weighed in equally at 150 grams, but when 'put to the test', 'Andrew' managed to pull 50% more (on a straight two party preferred basis!) than did 'Bob'. However, 'Bob' reckoned he would do better with the assistance of a broader base (such as the rail head of Peco track, rather than the fine scale Code 80 on the Dynamometer) and when this preference was included, 'Bob' got up with a 50% better pull than 'Andrew' had been able to achieve. 'Andrew' did not attempt to pull on the broader based Peco track, so 'on the day' 'Bob' was deemed to be the better of the two! This conclusion was reached about 2.30 pm, well before the completion of the nationwide contest and fully five days before a conclusion had been reached in THAT matter.

Twenty-two other locos followed onto the Dynamometer, including two 0 scale models, one of which strained the available power pack beyond its apparent 800 milliamp capacity. Garry Pilmoor's many wheeled Bachmann model of a DD40-X out-pulled all other comers with a 'heave' of 190 grams and Gus Durham's AR model of a NSWGR 45 Class diesel (a relative light-weight) outstripped everyone else, pulling 51.59% of its weight.

All was about to be packed away when Ron and Kevin Congdon were seen approaching with two very heavy cases, full of reputed heavy haulers. Despite the fact that the rest of the field had completed the course before these two starters fronted up to the starting line, the stewards permitted one each of their locos to be entered and

tried on the Dynamometer. Both needed the third scale of the Dynamometer for a reading to be obtained and Kevin's Tenshodo model of a 2-10-0 loco equalled the 190 gram pull of Garry Pilmoor's DD40-X.

Appropriate 'Certificates' are being prepared for the 'winners' of the Contest and for the 'lemons' that would find a paper bag rather difficult from which to escape!

Owners of locomotives which have 'tried their most' on the Dynamometer MkII in the past may notice that the same loco, when retested, does not always give the same result. The reason for this is not entirely clear, but it should be recognised that all scientific measuring devices have their own individual 'repeatability' parameters. This is a statistical measure of the expected 'spread' of results when measuring the same thing time after time. We should perhaps determine what is the repeatability of the Dynamometer MkII.

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Locomotive Maintenance and Repair

Text of a talk given by Ted

Thoday at the Clubrooms on 5/3/90

All model railway equipment needs 'looking after'. Due to the nature of small electrically driven models they tend to attract and collect lots of dirt and fluff (hair - both human and animal, carpet fibres, oily deposits from the atmosphere, etc); all of which tend to collect on the bearing and electrical conducting paths, such as wheel surfaces.

The difference between maintenance and repair is a grey area, one frequently leading to the other; for example:

Removing dirt and fluff, oiling, cleaning are all maintenance activities. These

things, done regularly and routinely may be termed PREVENTATIVE maintenance.

Replacing worn or broken components, perhaps found during maintenance, is, strictly speaking, REPAIR work.

Where the use of a power supply (controller) is mentioned, this assumes that it is known to be functioning correctly.

Objectives

- 1 Identify problem
- 2 Rectify problem

Identifying the problem

Symptoms	Possible causes
Will not run	Broken wire, pick-ups, motor u/s, dirt
Only runs slowly	Commutator, dry solder joint, dirt
Runs intermittently	Faulty wiring, pick-ups, dirt
Runs jerkily or with a 'limp'	Wheel quartering out, gear meshing incorrect, dirt

Derails continuously Wheel dimensions, dirt build up on wheel treads

Note that 'dirt' appears in all the above as a possible cause.

Checks to Make

Visual - look for dirt, loose wire/s, broken component/s, pick-ups not touching wheel surface, commutator brushes worn and/or not making contact, signs of arcing on copper segments, too much oil present.

Use multi-meter across wheels to check for circuit completeness

Use multi-meter across each pair of wheels, check that pick-ups are making contact and working correctly

What To Do

Remove the superstructure

Use a foam 'cradle' to hold model

Identify where each part goes as it is

Owner	Manufacturer	Prototype	Wheel Arrangement	Loco wt (g)	Traction Tyres	Tender Drive	Drawbar Pull (g)	Efficiency % D-bar pull/wt
Steam Outline - No Traction Tyres								
A Porter	Hornby	LMS Jinty (A)	0-6-0T	150	No	No	30	20.00
A Porter	Hornby	LMS Jinty (B)	0-6-0T	150	No	No	20 (45 on Peco)	13.33 (30.00 Peco)
N Blinco	Hornby	Dublo LMS 8F	2-8-0	670	No	No	68	10.15
AMRA	Mainline	LMS Jubilee	4-6-0	384	No	No	55	14.32
N Blinco	Hornby	Dublo BR std Class 4	2-6-4T	525	No	No	90	17.14
A Porter	Dapol	GWR County	4-6-0	410	No	No	37	9.02
R Solly	Eric Underhill	0 scale GWR 2021	0-6-0ST	555	No	No	145	26.13
G Pilmoor	Rivarossi	ACL Cab forward	2-8-0+0-8-4	442	No	No	139	31.45
				365 (w/o tender)			139	38.08
W Sullens	Hornby (c/work)	Thomas the Tank	0-4-0T	75	No	No	17.3	23.07
R Congdon	Schnabl;e	DB Class 01	4-6-2	960	No	No	178	18.54
K Congdon	Tenshodo	Santa Fe Class	2-10-2	915	No	No	190	20.77
Steam Outline - Traction Tyres								
R Green	Dapol	GWR 14XX Class	0-4-2T	192	Yes	No	67.5	35.16
N Blinco	Hornby	LMS 8F	2-8-0	390	Yes	Yes	58	14.87
C Cocker	Hornby	LMS Princess	4-6-2	410	Yes	Yes	69	16.83
AMRA	Hornby	LMS Duchess	4-6-2	435	Yes	Yes	81	18.62
Diesel Outline - No Traction Tyres								
A Durham	Bachmann	Penn RR GE 44 ton	Bo-Bo	168	No	-	25	14.88
A Durham	AR	NSWGR 45 Class	Co-Co	252	NO	-	130	51.59
D LingAtlas	0 scale	Plymouth Switcher	0-6-0	795	No	-	Insufficient amps available	-
G Pilmoor	Athearn	Santa Fe F7	Do-Bo(B-B)	474	No	-	100	21.10
G Pilmoor	Athearn	UPSD40-2	Co-Co(C-C)	390	No	-	140	35.90
M FossAthearn		SD40-2	CoCo(C-C)	440	No	-	105	23.86
N Blinco	Mehanotecnica	Alco C36 (L CI)	Co-Co	394	No	-	75	19.04
G Pilmoor	Bachmann	DD40-X	Do-Do(D-D)	520	No	-	190	36.54
Diesel Outline - Traction Tyres								
A Porter	Jouef	BR Class 40 1	Co-Co.1	406	Yes	-	60	14.78
A Porter	Lima	BR Class 40 1	Co-Co.1	380	Yes	-	68	17.89
A Porter	Lima	BR(W) Warship	B-B	398	Yes	-	160	40.20

removed

Keep any parts removed in a container

Many R-T-R locomotives use two small screws to secure the body to the chassis. With some Lima items, it is also necessary to remove the buffers by pulling them out of the buffer beam.

Handle everything with care.

DO NOT use abrasives to remove dirt - most of it will end up in the motor, no matter how careful you are!

Use methylated spirit on a cotton bud for dirt that is difficult to remove, use a wooden tooth-pick. As a last resort, use the end of a craft knife with great care, BUT NEVER ON THE MOTOR, PARTICULARLY THE COMMUTATOR SEGMENTS.

Use a pair of fine ended tweezers to pick out pieces of fluff and hair, etc.

Use lubricants sparingly - too much can cause insulation breakdown or will coagulate into a sticky mess that gums up everything. WD40 is recommended as a general lubricant - it appears to be compatible with the plastics used in model railway equipment. Sewing machine oil is suitable for metal moving parts - use a piece of thin wire dipped in the oil container to obtain the tiniest drop of oil, place with against the surface to be oiled and the oil will run off just where you want it.

You will need some of the following tools:

Screwdrivers, flat ended and Phillips slotted

Needle file

Multi-meter

Soldering iron, solder, flux

Foam 'cradle'

Wooden tooth-picks

Cotton wool buds

WD40 or sewing machine oil

Methylated spirit (or, alternatively, isopropyl alcohol will do)

Small pliers

Container for parts

Magnifier

Craft knife

Controlled 12 volt d.c. power supply

Wheel gauges (or caliper micrometer)

Our Library complains about the diagrams issued by the Model Maintenance Company, which show exploded diagrams and part numbers of many current locomotives, their motors and running gear in the Hornby, Lima and Wrenn ranges.

Here's a Hint - Constant Brightness Coach Lighting

This one arose during the 'Why Doesn't It' session held on 24 February when the subject of coach lighting came up. The following circuitry and explanation was based on that which appeared in Electronics Australia, November 1984.

The voltage across the track is a rectangular wave with an amplitude of 22 volts and a mark space ratio of between zero and 50%. (This is clearly based on the output of a modern solid state controller with its 'chopped' output, rather than the output from an 'old fashioned' resistance controller.) The lighting circuit, however, relies on the fact that as soon as the throttle is moved from the zero mark, the peak voltage of +22 volts is available.

This voltage is used to charge a 100 uF capacitor via a 4.7 ohm resistor and diode D1. The resistor limits the peak current while the capacitor charges, while the diode prevents the capacitor from being discharged by the motor when the voltage from the motor is zero.

The capacitor charges up to almost the full +22 volts and this is regulated by the 78L12 three-terminal regulator. A 10 uF capacitor in the output of the regulator ensures that the regulator remains stable. A 12 V grain of wheat type bulb is used as the load. However, any bulb can be used as long as it is rated for 12 V operation and draws less than 50 mA.

The circuit for this scheme is given below - you will require one of these for every coach on the train, each coach, of course, being equipped with metal wheels and pick-ups.

A suggested layout on a small piece of Veroboard was given, but it is a very simple circuit and should not, therefore, be too difficult to put together 'in your own way'.

Alan Porter

Have You Seen?

In The Model Railway Press

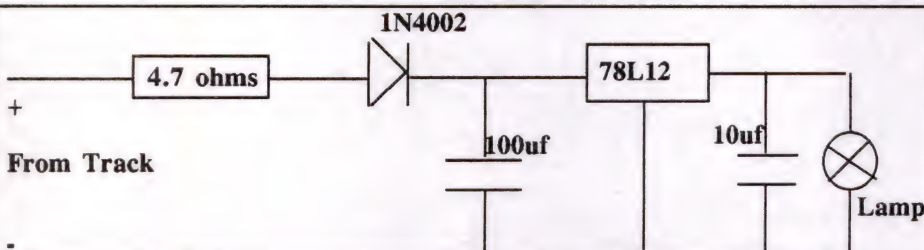
Model Railways

February: Couplings - the Alex Jackson coupling method modified, suitable for N, 00 and 0 scales, so the article claims. A description of Model Rail 90, the Scottish model railway exhibition. Upgrading the Lima Class 37/0 to represent a Railfreight version. construction review of the Decent Models kit for a Caledonian Railways 3rd Picnic Saloon. Construction of a 7 mm scale signal box based on the ex Caledonian Haughhead Junction box. Layout focus looks at the modern image layout of the Livingston and District MRC. More on the RJH model of BR Class 90 - the front end and cab interiors, detailed photographs of the prototype included - this is followed by a detailed livery diagram for the Railfreight Class 90. The Hornby model of the BR Class 90 is reviewed and detailed. Modelling the Glasgow area EMUs in their very attractive black and orange livery. LNER Open Wagons (Part 2) - more photographs and prototype information. Camera and Comment looks at two ex LNER locomotives, a J36 and an A4. A Kenworth truck modelled in 7 mm scale.

March: Layout Focus looks at Beechwood Park, a 4 mm scale layout based on the Southern in BR days. The construction of a 7 mm scale narrow gauge model of Tralee and Dingle 2-6-2T No 5T and Cork, Blackrock and Passage 2-4-2T No 10L described. Wiring your layout, part 2 - planning the wiring. Railway cranes - four prototypes described with drawings, photographs and prototype information, together with a tabulation of Cowans, Sheldon 15 ton standard steam breakdown cranes - curved jib. Conversion of the Keil Kraft Green Line AEC bus kit to build models of various similar prototypes from the Co Durham fleet. Prototype article featuring the GNR Class C1 large boomed Atlantics with drawings, detail sketches, photographs and information. More on the construction of the RJH model of the BR Class 90, plus more prototype detail photographs in colour. For the American fans, a full page of colour photographs of American diesel locomotives, plus a look at some of the products available at AstroRail 89. Construction of an LNER (ex GNR) V12 4-4-2T from the Craftsman kit and to EM gauge standards. 7 mm Realism looks at the history, layout and other things, apparently one man's experiences, a bit of philosophy, some useful hints and tips, lighting locos both in 4 mm and 7 mm scale plus some scenery techniques. Camera and Comment looks at Oxford. Tibberton, the unfinished layout of the Craven Scalefour Group described in detail. Goods Arrival looks at more Lima variations on the BR Class 47, the BR Class 26 and 27 models, new batch of BR Class 156 Super Sprinters, the BR Class 31 and the BR Class 87, plus Little Engines' 4 mm scale model of the GNR N1 0-6-2T.

Railway Modeller

March: Railway of the Month is Leighford, the 00 scale exhibition layout of the Wolverhampton MRC. A BR Dormitory Van using the Dapol ventilated van as the base for this unusual prototype - article includes information on the prototype and photographs. A Caledonian Railway signal box scratchbuilt in 4 mm scale. Slate roof modelling (part 2) - ridge tiles and the finishing process. A philosophical article suggesting a system for indicating periods in British railway history similar to that in use in Europe. Prototype information, drawings and photograph of Port Talbot Railway 0-6-0ST No 14. Illuminating model buildings, etc, using LEDs, fibre optics, etc. A range of N scale wagons constructed and illustrated. The Stafford Railway Circle's 4 mm scale Littleton Junction described, including several colour photographs - two features of this layout are worth looking at; the signal structures stayed as in the prototype have been most effectively done; and the baseboard leg system used on this layout could be adopted by anyone whose layout goes on tour to exhibitions. The 0-16.5 layout of Hazel Grove and District MRC described. Maidenhead - Part 2, dealing with electrics and the rolling stock. The 4 mm scale model of an O&K 102 tonne PHA bogie hopper completed. Watford Town layout has been described before (R/M, 3/88, p123) - a progress report. Plan of the Month looks at Grimsby Town: need a layout in a confined space? - this may be your answer! Junior Modeller shows a diorama based on the Somerset and Dorset. The bus boys might look at News Special - the latest from Lledo are in AEC Regal single deck half-cab and a Regent double decker in a variety of liveries.



Model Railway Journal

No 36: MRJ Portfolio looks at one of the buildings made for their Inkerman Street layout. Inkerman Street baseboards, planning, construction philosophy, light weight beam method of construction. Drawing, photograph and prototype information on a 10 ton coal hopper wagon belonging to the Moresby Coal Co Ltd. Geoff Williams describes the way he used perspective modelling to deceive the eye into believing that everything is perfectly normal when it is not, very well done. A construction review of the Slaters 7 mm tank wagon kit. Model Railway Operation - Part 7, looks at signalling, interlocking and their effect on running. Construction of a 4 mm scale model of Tallylyn using the Meridan Kit as the base. Small Suppliers Forum gives details of the Industrial Railway Society and looks at Taylor Plastic Models bolster wagon kit in 2 mm scale built as SAA, KTA, or RRB, Smoking sign transfers for 4 mm scale GWR coach windows, 4 mm scale hornblocks and guides from MJT Scale Components, Studio Scale Models kit for the GNR(I) 20 ton goos brake van and assorted castings, Comet Coaches Pullman coach overlays, LT&SR 69 Class 0-6-2T, photographs, drawings and information. More detailed information and photographs of the GER Buckjumpers. Structures Worth Modelling No 4 looks at a hotchpotch industrial building.

No 37: A 4 mm scale narrow gauge model based on the Welsh slate workings around Dinorwic, scenery is real slate! Inkerman Street - the track, building and laying the point and track formations. Resin casting methods to make track parts for 7 mm scale, a similar process to that used by our Sn3-1/2 Group, but using different compounds to achieve fine and crisp detail in small parts. Portfolio looks at the chassis of Tony Miles' 4 mm scale model of a GNR(I) Class Q 4-4-0, which exposes the full working inside valve gear - it won him a Gold Medal at the 1988 Model Engineering Exhibition. Modelling a small town gas works in 4 mm scale. Modelling GWR vans in 4 mm scale, the Diagram V6 from a Ratio Kit and the Diagram V5 from the Coopercraft range. Having cast 4 mm scale wheels using the lost wax process, this article describes turning them to size and finishing off. Small Suppliers Forum looks at wheelsets to 21 mm gauge for Irish prototypes modelled (correctly) to 4 mm scale. Branchlines' latest 4 mm kit for the 45' MR celestary corridor passenger brake with round panels, and their 7 mm scale crosshead and guide for an NG quarry Hunslet kit coming shortly, more variations on hornblock systems from MJT, Bill Bedford Models' fret of small handwheels, a special offer for NER 8 ton ironstone wagon etches, Chowbent Castings L&Y kits in 4 mm and 7 mm scale, Impetus Models' one piece resin cast body for a 4 mm scale Sentinel loco.

Scale Model Trains

January: Part 3 of the building of the Barry Railway 0-6-4T - detailing, painting and completing the model. The use of tarpaulins on goods wagons - essential feature of most pre-war and some post-war railway operations. Prototypes for small washing plants for carriages. A garden railway in 1:32 scale using 0 gauge track to simulate the 3' gauge prototype in Majorca. A very useful small waterfront prototype layout on the River Main and a

proposed modelling concept for it, including change of nationality if required. A uniquely British facility, the paste table (for pasting wallpaper before application originally) used as a base for a model for a 12' x 2' gadgets fold on their centre line and a plan is given for a 12' x 2' layout in On16.5 using two tables, which could fold up into a total thickness of about 6". Listing of the Shed Codes of the GWR pre- and post- nationalisation (Cop Reading in BR days, 81D). Drawing of the corridor tender, with longitudinally divided coal bunker (half for bagged coal, half for bulk coal) built by the LMS for locomotive testing purposes. Drawings, photographs and information on the ex LSWR footbridge at Sherborne, with ideas for modelling.

February: Yet another conversion of the Atlas 0 scale model of the Plymouth diesel shunter (US prototype in case you're confused or ignorant on the finer points) - incidentally, the Atlas model is now hard to get in the UK at least. Oval Ash is an 0 scale model of tracks in a steelworks where the illusion of space is created without the use of any points at all for the seven tracks running across the 7'6" baseboard, although apparently primitive in concept, it has potential for unattended exhibition use. Another German waterfront location (this one at Osthafen, in Frankfurt-On-Main), where there's lots of small sidings serving many small traders, as a modelling possibility. Making up an old K's kit of the GER Class 53 (LNER Class J70) 0-6-0 tram engine (prototype for Toby who is one of the friends of Thomas the tank engine), but using a four-wheel chassis from the Lima HO scale model of the Plymouth shunter as the motive power (behind the loco's prominent skirts, who knows the difference?). Article on operating Stokenham (construction of which has featured in the several past issues of this magazine) gives many useful tips on what to do and what not to do to simulate prototype practice (e.g. arrangement of unfitted and partly fitted goods trains, location of brake compartments on passenger trains, attaching vans and milk tank wagons to passenger trains). Making a stub point in On16.5 with swivelling crossing (frog). Weathering of buildings the easy way.

March: Considering modelling Swiss railways. Another table-top 0 scale layout, creating an authentic looking industrial scene - this one's on a 6'3" x 1'0-1/2", so there's no reason why anyone cannot model in the large scale indoors. Drawings of the Metropolitan Railway's standard three-plank wagon of 1895, very much based on the style of the Midland Railway. A present day industrial siding (Taunton Cider, at Norton Fitzwarren) which can be the basis of a 5'3" x 1' layout in 00 scale. A goods waybill system based on British practice - it's the old one using sleeved wagon cards and reversible wagon waybills. Part 1 of a series on building locomotives (in 0 scale) in styrene - this part deals with the boiler (parallel only) and includes Belpaire fireboxes. A quick review of the new Lima model of the BR Class 26 and some detail changes to make this good model even better.

Model Railroader

February: The Puye and Phui RR, a fictitious granger short line set in the Upper Mississippi River Valley around 1906 which uses a 15' x 24' space and has lots of period atmosphere. A working (flashing) ECT -

which stands for End of Train device, the warning signal fitted onto the last wagon of modern freight trains operating without a caboose, guards van or brake van - the electronics are such that you really need a piggy back trailer on a flat car to be accommodated. Drawings of the road-rail transfer shed of the Pacific Motor trucking Company at Eugene, Oregon, together with the associated assorted small structures of various shapes and sizes. A backward (mirror image) of the first Gorre and Daphetid, but built in France in N scale. Description of the N scale layout of the Cassville - Prairie du Chien subdivision of the Burlington Northern designed to fit into a 10' x 9' room or space and sponsored by the staff of the magazine - this is only a first look so presumably later articles will cover the actual making of this very nice model railway. Drawings, photographs and data on modern general service tank cars giving the specification fittings for various liquid cargoes, an extensive list of liquids carried (113 in all), sizes and capacities, tank car owners (such as Union Tank Car Co with its UTLX reporting marks) and details of the numbering and liveries. Scratchbuilding a 50 ton ore car (base on an Apache RR, Arizona prototype) in G scale using styrene sheet, including frame. Lots of very useful hints in this article on the use of styrene, rivetting, etc). A table of dimensions of the kit chassis available from Mantua, Bowser, MDC, giving wheel arrangements, driving, pilot and trailing wheel diameters and spacings, all expressed in prototype feet. Design for a portable work bench with holders for tools, paints and other materials. Fitting an Alco Models brass body shell to an Atlas frame and mechanism. Painting up a Rail Power Products' GE C32-8 HO scale body shell in Conrail blue.

March: Modelling a might have been railroad in South Pennsylvania between Pittsburgh and Harrisburg - this layout covers a 50 mile section with 10 of the stations that might have been - nice modelling of the scenery of the eastern side of the US, as well as the use of the KISS system of modelling (Keep It Simple Stupid). Modelling a fuel supplier's warehouse and coal drops based on an actual prototype in West Virginia and ideas for its location in a layout corner or along a straight. The anticipated Part 2 of the story of the Burlington Northern layout to fit into a 10' x 9' space - this part describes the use of a computer assisted design system to ensure that the layout fitted and how it can be expanded to fit larger spaces. Kitbashing a Con-Cor N scale model of a standard 80' baggage car into a NYC 61' baggage car with ideas for other length cars as well. A progress report from the Franklin and South Manchester RR (featured previously in Model Railroader in April 1986, April 1987 and January 1989) where there's been some additions, including a building of 27 stories and a 26" long rolling bascule bridge. @Articles on the lumber industry in British Columbia, showing how the logs were hauled to the central shipping (floating them down the river) point, launched and retrieved with modelling ideas for 1917 and 1925 eras and another on building the structures, etc, of a north Michigan sawmill in N scale, including log retriever from the river, mill trees, weeds, wildflowers, icicles from melting snow (definitely not required for local modelling), flowing brook, moss, tar roofed sheds. Paint Shop treats an 0 scale Alco model of an RS-2 after altera-

tion to an RS-3 by a kit of kit bashing and finishes up in the green and gold livery of the Maine Central RR.

Extracts supplied by Alan Porter and Ted Thoday

Have You Seen?

In the Prototype Press.

Railway Magazine

January: Cover photo in colour shows the subtle differences between main line trackage and an adjacent siding (type of sleepers, of rail fastenings, patina of rail tops and sides, colour and cleanliness of ballast, etc), as well as a two-doll bracket signal of the ex LNWR and LMS on the North Wales coast line. Black and white photo showing the placement at Keighley of the famous (or, infamous) turntable from Garsdale on the Settle to Carlisle line reveals some turntable detail not often seen. A review of the last years of the former NER Worsell 4-4-0 R Class (LNER D20s) has nine black and white photos and some technical and operating detail of value if you're into modelling these massive locos with the ballroom sized cabs! An article titled Light Rail Revolution has examples of several of these modern tram related vehicles. Description of a typical day's work at Worcester shed of the GWR has detail of how a model motive power depot should be operated realistically. Good colour photo of the spectacular stone viaduct across the River Nidd at Knaresborough, Yorkshire - a great prototype to model. If you're needing to model industrial clutter, look at the black and white photo of the Guinness Brewery Yard in Dublin.

Railway World

January: Cover photo in colour has a real close-up of the end buttress, wall and capping of Ais Gill Viaduct and of a random dry stone wall adjoining. Rivet counters can actually do that on a great colour photo of newly restored King Edward 1 at Tyseley, as well as get detail of typical GWR point rodding, locking bar, ground level 'doll', timbered road crossing, signal box, etc. another black and white photo (but slightly different angle of the ex Garsdale turntable being placed at Keighly. Narrow gauge modellers will delight in an article on the Tallylyn Railway in its 40th year of preservation, with some great colour photos (including one showing how snow really sits on tree branches, rails of fences, etc, and another with the most dilapidated lineside fence. An article with colour photos of another NG delight - the County Donegal Railway with its unique rail-cars (which look more like buses on flanged wheels). Modellers of congested city locations could benefit from the photos in an article on the end of the Holborn Viaduct station. Feature on the Tanfield Railway, a preserved ex-industrial line in Co Durham has six colour and seven black and white photos provides inspiration to make a model of this standard gauge dinky little line which is very suitable for space starved modellers to consider. Part 2 of an article on the Derby Lightweights - first generation DMUs, containing, as did Part 1 (which appeared in the December 1989 issue and was omitted in error from the extracts given in the February issue of The Branchline), drawings of the Driving Motor Brake Composite with lavatory and the Trailer Brake second

with lavatory, all of which, with the photos (12 black and white, one superb colour) would be essential to series modellers of species now extinct.

February: Another cover photo of value for modelling, this one showing Princess Elizabeth coming through the castellated arch in the Conway town wall. Feature article on the dinky little standard gauge locos (all four-wheeled saddle tanks) at Fulstow, Lincolnshire - this sort of locomotive with appropriate four-wheel rolling stock make excellent subject matter for those short of space, but who are not moved by the narrow gauge charms. Colour photo of the silver lettered version of the LMS crest, used on the Coronation Scot.

Steam Railway

December: Rare colour photo of the loco livery of the Great North of Scotland Railway in the form of preserved 4-4-0 No 49, Gordon Highlander in 1965 in a stone reinforced cutting. Nothing to do with modelling, but interesting nevertheless - a tabulation of the total number of steam engines ever built in various countries of the world (the US leads with 177 000, Germany next with 155 000, England + Scotland + Wales + Ireland next at 138 150, and so on down to Turkey with 1).

January Now if you really want to model a snow scene, look at the super colour photo - it could just as well have been done in black and white, for, apart from a red buffer beam, that's all the colours there are - on the cover of this issue. Yet another black and white photo of a turntable's gizzards as seen when the ex Garsdale table was being lowered into the pit at Keighley. This 40th year of preservation issue has feature articles on the Middleton Railway, the Chasewater Railway, the Bluebell Railway and the Tallylyn Railway - in each there are photos to inspire the modeller

Locomotives Illustrated

No 68: Photographic essay, preceded by 2-1/2 pages of text, dealing with the rebuilt versions of the LMS Royal Scots (8including British Legion, which was the result of putting a Stanier Type 2 boiler on the frames of the ill-fated high pressure Fury) were rebuilt (eventually) over a period of nearly 20 years and in some cases only seven years before withdrawal. Eighteen of the 50 Patriots and two of the 190 Jubilees were dealt with before other factors, such as the advent of the BR Britannia Class influenced things. Black and white (54) and colour (6) photos cover these look-alike classes and there are, as usual, tables of building, rebuilding and withdrawal dates and of shed allocations in 1950, 1957, 1960, 1963 and 1964 for these classes.

No 69: Another lot of rebuilds, this time the Bulleid Light Pacifics (the West Country and Battle of Britain Classes) are looked at using the usual technique of 2-1/2 pages of introductory text, many black and white (50) and a few (5) colour photos and tabulated data on the dates of building, rebuilding and withdrawal, as well as each loco's allocation in 1961 and 1964 and its final shed. Unlike the larger Merchant Navy Class of Bulleid Pacific, not all of the Light Pacific types were rebuilt - 43 of the 66 West Country locos and 17 of the 44 Battle of Britain locos were rebuilt by BR in the late 50s/early 60s before, among other factors, increasing spread of the electrified lines in the Southern Region,

called a stop. These were the last steam classes to work out of London in 1967.

Steam Days

January-March: Frontispiece colour photo of two BR standard 3MT 2-6-2Ts on shed, one in the Western Region green all-over green livery and t'other in normal BR lined black - excellent photo for super detailing, showing grime, boiler chemical stains, heat affected smokeboxes, etc. Feature on the Olympia Shuttle in Central London gives an idea of the type of atmosphere that Roger Carrell is daydreaming of four Harrington Street. A look at SR (ex LSWR) T9s in service, one with a lovely mixed of two coaches and three vans. Centre spread is a ripper colour photo of a typical Isle of Wight passenger train crossing the River Medina at Newport in 1964 - sailing barges, old corrugated iron fence and gate to factory yard, fretted brickwork, post and chain fence, timbered warehouses, etc - great atmosphere. Drawing, photographs and textual material on the BR Standard 3MT (or Class 3) 2-6-2T. Article on freight working on the Ditton Priors branch of the GWR in Shropshire - a quaint line. Britannias in service, including a nice colour shot of grimy and unkempt Owen Glendower.

British Railway Journal

No 28: A detailed article on the Crystal Palace (High Level) branch in south London - plenty of detailed structure photographs of the terminus station (which was an impressive four-track covered affair) with the unusual feature of a turntable servicing all four roads to save on points for locos to run around their trains (and be turned at the same time) - a useful modelling dodge when you're short of space), as well as the other stations of the branch. Centre spread photograph of a GWR coal dump is an inspiration to put in that odd corner. Going Great Western in the 1940s looks at locomotive and train working, includes several black and white photos with considerable scenery and station detail, such as a look under a platform canopy and some great shots of the goods yard at Newham. Interesting photo of a four-doll bracket signal with ENORMOUS sighting board about 30' x 20' behind the arms - the structure holding up this lot is about twice as massive as the girders of the signal post itself.

No 29: A detailed article on the Somerset and Dorset Joint Railway branch to Wells. A description of a journey through South Wales in 1931 has many photographs of GWR and its absorbed Companies' locomotives showing much detail in the backgrounds. All in a Day's Work gives a good insight into locomotive and carriage rostering.

Back Track

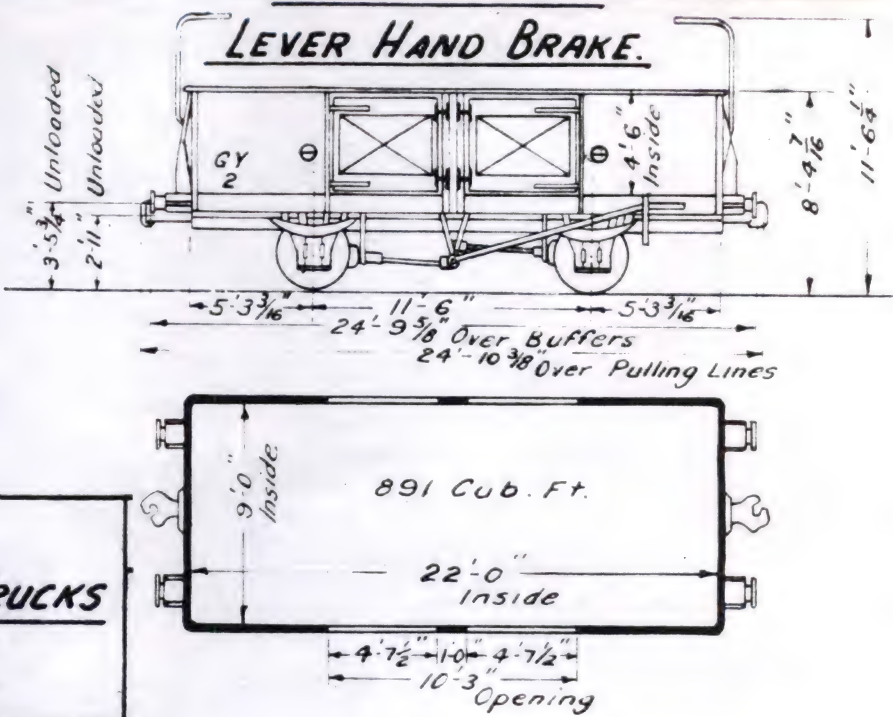
Vol 4, No 2 (March-April 1990):

An article on the Forth Bridge with a colour photo of two Type 2 diesel electrics (later Class 25) in original green livery without front warning panels in 1962. The Huddersfield to Penistone Railway, with black and white photo of station canopy ironwork and two in colour, one of the wagon lift at Huddersfield (an unusual item for modelling) and one of the charming country station at Brockholes with great modelling detail, such as dribbles of white-wash down the face of the platform edging stones. Four colour photos of Deltics in original two tone green, with and without yellow panels up front. Some great shots at Willesden Shed, with clutter, brilliantly red breakdown crane and original diesel loco-

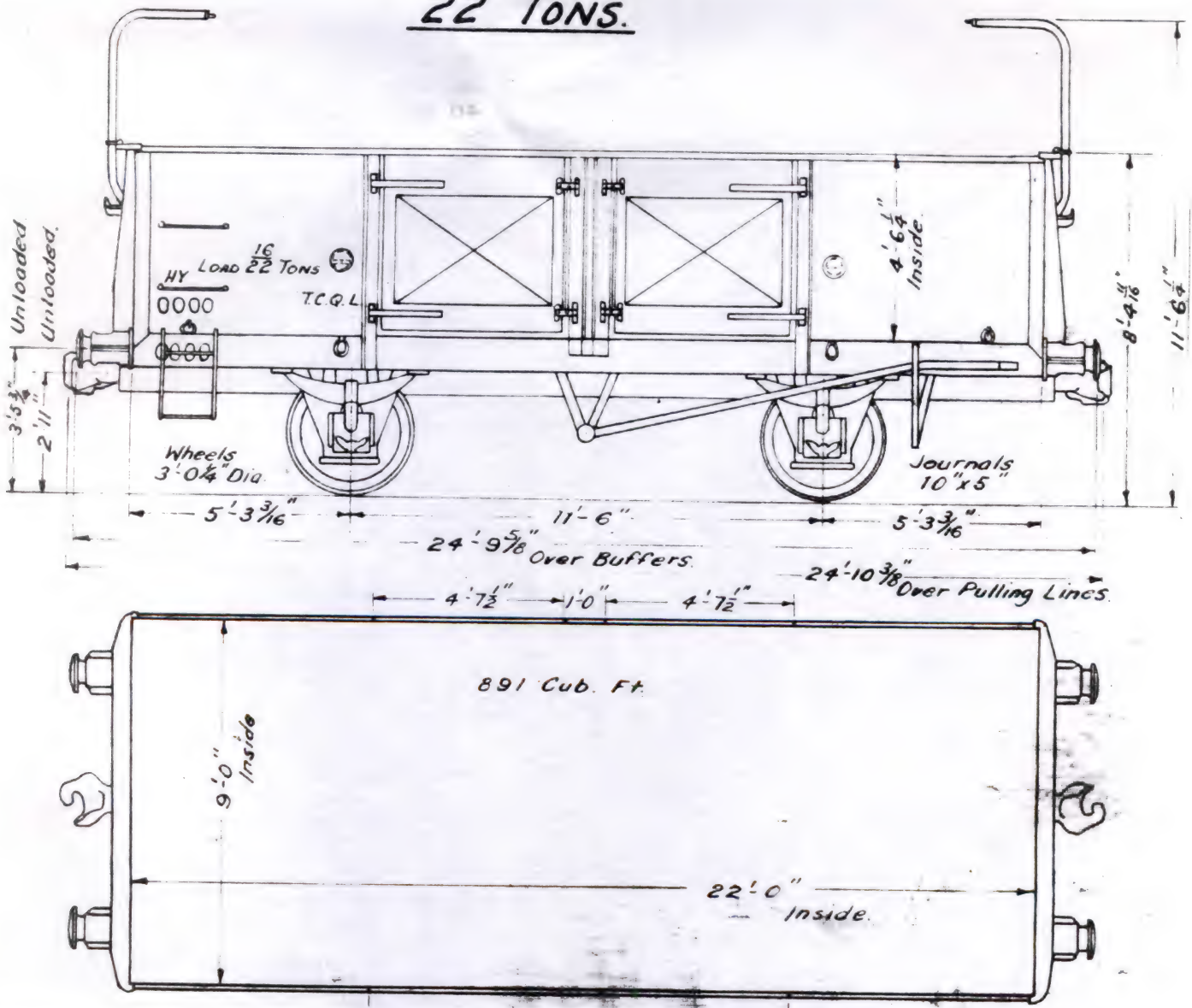
motive No 10001 looking forlorn. More great colour pictures of the IoW, one at Newport with platform water crane and RUSTY fire-devil and one of the cliff face, signal box and tunnel mouth at Ventnor (another station where a turntable was used to facilitate locos running round their trains). Article on the Gresley K3 2-6-0s with several black and white photos of the class. Photo essay on truro. A look at the Dyke branch of the LB&SCR. Colour photo of the station building at Lostwithiel, Cornwall (complete with palms). Colour picture on back page of an oil train in steam days, showing correct use of barrier wagons fore and aft - modelling must.

Extracts supplied by Ted Thoday and Alan Porter)

VICTORIAN RAILWAYS TRUCKS
Types GY & HY



HY
22 TONS.



LIST OF PLANS APPEARING IN JOURNAL.

STATE.	CLASS.	CODE.	W	ARRGT.	SCALE.	ISSUE.	MONTH.	YEAR.	PAGE.
AN	NB	DM		0-6-0	1:64	41	AUG	81	28
AN	NJAB	SRM		0-4-2	1:98	42	NOV	62	14
AN	SA	WBT		BOGIE	1:70	44	MAY	64	22
CT	JF	ST		0-6-2	1:48	41	AUG	81	11
DME	?	ST		0-4-0	1:60	48	JUN	63	19
GRI	?	WO		4	1:39	48	JUN	63	17
GRI	DAY B	DM		0-4-0	1:24	50	DEC	63	11
GRI	DAY C	DM		0-6-0	1:24	50	DEC	63	13
GRI	FORD	GMT		1-A	ND	48	JUN	63	15
GRI	HUNSLET	ST		0-6-0	1:76	155	JUL/AUG	83	140
J&A	ROD	S		2-8-0	1:135	140	JUL/SEP	80	82/83
MFM	BARCLAY	ST		0-4-0	ND	47	MAR	63	30
MFM	?	WO		BOGIE	1:38	47	MAR	63	31
MFM	?	WCV		BOGIE	1:38	47	MAR	63	32
NSW	40	DE	A1A-A1A	1:87		36	MAY	60	34/35
NSW	70	DH		0-6-0	ND	154	MAY/JUN	83	111
NSW	72	DH	Bo-Bo		ND	154	MAY/JUN	83	96
NSW	73	DH	Bo-Bo		ND	156	SEP/OCT	83	194
NSW	79	DE	Bo-Bo	1:64		40	MAY	61	10/11
NSW	81	DE	Co-Co	1:121		157	NOV/DEC	83	229/230
NSW	81	DE	Co-Co	1:87		159	MAR/APR	84	46/47
NSW	A	WDS		4	1:87	81	JUL/AUG	69	10/11
NSW	ABV	WV		4	1:87	96	JAN/FEB	72	10
NSW	B	WF		4	1:76	40	MAY	61	29
NSW	BBW	WB	BOGIE	1:87		96	JAN/FEB	72	9
NSW	BCW	WC	BOGIE	1:87		91	MAR/APR	71	29
NSW	BD	WO	BOGIE	1:87		51	MAR	64	15
NSW	BDS	WO	BOGIE	1:87		51	MAR	64	15
NSW	BH	PC	BOGIE	1:87		30	NOV	58	23
NSW	BPV	WV	BOGIE	1:99		118	JAN/MAR	76	17
NSW	BWF	WF	BOGIE	1:87		85	MAR/APR	70	35
NSW	BWH	WH	BOGIE	1:98		108	JAN/FEB	74	18
NSW	C32	S		4-6-0	1:87	64	SEP/OCT	66	16/17
NSW	C38	S		4-6-2	1:72	21	AUG	56	18/19
NSW	C38 T	SLT	BOGIE	1:72		22	NOV	56	22
NSW	CCH	WHC		4	1:99	117	OCT/DEC	75	118
NSW	CHO	PBV	BOGIE	1:87		51	MAR	64	22
NSW	CV	WV		4	1:87	96	JAN/FEB	72	10
NSW	CW	WC		4	1:87	55	MAR	65	20
					1:87	108	JAN/FEB	74	5
NSW	D58	S		4-8-2	1:76	52	JUN	64	21
NSW	E17	S		0-6-0	ND	41	AUG	81	31
NSW	F	WFB	BOGIE	1:87		85	MAR/APR	70	33/34
NSW	FH	PC	BOGIE	1:87		30	NOV	58	24
NSW	FHG	WBV	BOGIE	1:108		140	JUL/SEP	80	103
NSW	G	WO	BOGIE	1:87		85	MAR/APR	70	33/34
NSW	GSV	WS		4	1:96	133	JAN/FEB	79	21
NSW	HFH	PC	BOGIE	1:87		30	NOV	58	22
NSW	HG	WBV		4	1:87	48	JUN	63	7
NSW	HUB	PC	BOGIE	1:87		30	NOV	58	21
NSW	IHO	PBV	BOGIE	1:87		51	MAR	64	18
NSW	K	WH		4	1:87	39	FEB	61	19/20
NSW	K	WF		4	1:87	39	FEB	61	19/20
NSW	K	WO		4	1:87	119	APR/JUN	76	49
NSW	KF	WO		4	1:87	39	FEB	61	19/20
NSW	KH	WH		4	1:87	39	FEB	61	19/20
NSW	KP	VMS	BOGIE	1:87		35	FEB	60	31
NSW	L37	WSF		4	1:87	104	MAY/JUN	73	49
NSW	L522	WLV		4	1:87	86	MAY/JUN	70	46

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STATE.	CLASS.	CODE.W	ARRGT.	SCALE.	ISSUE.	MONTH.	YEAR.	PAGE.
NSW	LCH	WHC	4	1:64	43	FEB	62	36/38
				1:87	44	MAY	62	29
				1:87	46	NOV	62	38
				1:99	117	OCT/DEC	75	118
NSW	LHG	WBV	BOGIE	1:87	53	SEP	64	33
NSW	LLV	WLV	BOGIE	1:87	94	SEP/OCT	71	98/99
NSW	MH	WHB	4	1:87	44	MAY	62	31
NSW	MHG	WBV	BOGIE	1:87	53	SEP	64	34
				1:100	104	MAY/JUN	73	60
NSW	MHO	PBV	BOGIE	1:87	55	MAR	65	19
NSW	MLV	WLV	BOGIE	1:87	119	APR/JUN	76	48
NSW	OBS	PC	BOGIE	1:96	3-3	AUG	53	18A
				1:96	3-4	NOV	53	20A
NSW	OCX	WFC	BOGIE	1:87	95	NOV/DEC	71	124/
								125
NSW	P(127)	ST	0-6-0	1:43.5	140	JUL/SEP	80	89/90
NSW	PFH	PC	BOGIE	1:87	30	NOV	58	25
NSW	PHG	WBV	BOGIE	1:87	52	JUN	64	28
				1:87	52	JUN	64	30
				1:87	52	JUN	64	31
				1:99	117	OCT/DEC	75	111
NSW	PV	WV	4	1:99	118	JAN/MAR	76	16
NSW	RBH	PC	BOGIE	1:87	30	NOV	58	24
NSW	RFH	PC	BOGIE	1:87	30	NOV	58	23
NSW	RH	WHB	4	1:87	44	MAY	62	31
NSW	RU	WTW	4	1:87	40	MAY	61	29
NSW	RU	WHW	4	1:76	40	MAY	1	27
NSW	S	WO	4	1:87	37	AUG	60	17
				1:76	38	NOV	60	4/5
NSW	SFS	PC	BOGIE	1:96	3-4	NOV	53	20A
NSW	SHO	PBV	BOGIE	1:87	51	MAR	64	21
NSW	U	WH	4	1:87	39	FEB	61	19/20
NSW	VHO	PBV	BOGIE	1:87	32	MAY	59	34/35
NSW	X200	DH	0-4-0	ND	155	JUL/AUG	83	147
PLM	241-CI	S	4-8-2	1:87	36	MAY	60	13/17/
								21/24
QLD	6	DRC	2-A	1:64	162	SEP/OCT	84	141
QLD	9	DRC	2-A	1:62	163	NOV/DEC	84	157
QLD	10	DRC	2-A	1:62	163	NOV/DEC	84	157
QLD	12	DRC	2-A	1:64	162	SEP/OCT	84	141
QLD	13	DRC	2-A	1:64	162	SEP/OCT	84	141
QLD	15	DRC	2-A	1:64	162	SEP/OCT	84	141
QLD	20	DRC	2-A	1:64	162	SEP/OCT	84	141
QLD	24	DRC	2-A	1:64	162	SEP/OCT	84	141
QLD	38	DRC	2-A	1:62	164	JAN/FEB	85	164
QLD	731	WBV	BOGIE	1:64	33	AUG	59	37
QLD	1170	DE	Co-Co	1:100	160	MAY/JUN	84	79
QLD	1250	DE	Co-Co	1:64	47	MAR	63	20
QLD	1600	DE	Co-Co	1:100	160	MAY/JUN	84	79
QLD	1620	DE	Co-Co	1:106	160	MAY/JUN	84	79
QLD	1720	DE	Co-Co	1:100	160	MAY/JUN	84	79
QLD	2100	DE	Co-Co	1:95	157	NOV/DEC	83	222
QLD	AB	WR	4	1:64	38	NOV	60	31
QLD	ABG	WR	4	1:64	38	NOV	60	31
QLD	ALG	WLV	4	1:64	36	MAY	60	28/29
QLD	ASG	S	2-8-2+2-8-2	1:87	114	JAN/FEB	75	16/17
QLD	B 16 1/2	S	2-6-2	1:75	163	NOV/DEC	84	184
QLD	B 18 1/4	S	4-6-2	1:64	35	FEB	60	8/9
QLD	BB 18 1/4	S	4-6-2	1:64	35	FEB	60	10/11
QLD	C	WV	BOGIE	1:87	115	APR/JUN	75	51
				1:87	123	MAR/APR	77	54

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STATE.	CLASS.	CODE.	W	ARRGT.	SCALE.	ISSUE.	MONTH.	YEAR.	PAGE.
QLD	C 16	S		4-8-0	1:64	38	NOV	60	14/17
QLD	CLF	WV		BOGIE	1:87	115	APR/JUN	75	51
					1:87	123	MAR/APR	77	54
QLB	CMB	WR		BOGIE	1:64	38	NOV	60	34
QLD	CMC	WR		BOGIE	1:64	38	NOV	60	34
QLD	CMJ	WR		BOGIE	1:64	38	NOV	60	33
QLD	D 13	ST		0-6-2	1:64	156	SEP/OCT	83	184
QLD	DF	WO		4	1:64	42	NOV	62	7
QLD	EIC	WE		4	1:64	56	MAY	65	13
QLD	F	WO		4	1:64	24	MAY	57	25/26/ 28
					1:64	42	NOV	62	5
QLD	FF	WO		4	1:64	42	NOV	62	6
QLD	FG	WO		4	1:64	24	MAY	57	25/26/ 28
QLD	FG(FGM)	WO		4	1:64	42	NOV	62	7
QLD	FJ(FJM)	WO		4	1:64	42	NOV	62	7
QLD	FJS	WO		BOGIE	1:64	31	FEB	59	12
QLD	FM	WO		4	1:64	42	NOV	62	5
QLD	H	WO		4	1:64	24	MAY	57	28-30/ 32
QLD	HJS	WO		BOGIE	1:64	31	FEB	59	9
QLD	HO	WO		BOGIE	1:87	123	MAR/APR	77	55
QLD	IC	WC		4	1:87	56	MAY	65	11
QLD	ICG	WC		4	1:87	56	MAY	65	12
QLD	K	WC		4	1:87	56	MAY	65	14/15
QLD	KA	WC		BOGIE	1:104	160	MAY/JUN	84	78
QLD	KKB	WC		BOGIE	1:110	160	MAY/JUN	84	78
QLD	KS	WC		4	1:64	56	MAY	65	16
QLD	MTW	WFT		BOGIE	1:64	34	NOV	59	15
QLD	PB 15	S		4-6-0	1:64	170	JAN/FEB	86	9
QLD	QG	WFT		4	1:64	34	NOV	59	12
QLD	RM17-39	DRC		2-A	1:62	166	MAY/JUN	85	76
QLD	RM40	DRC		2-A	1:77	165	MAR/APR	85	31
QLD	RM42-45	DRC		2-A	1:62	166	MAY/JUN	85	76
QLD	RM50-52	DRC		2-A	1:62	166	MAY/JUN	85	76
QLD	RM54-61	DRC		2-A	1:62	166	MAY/JUN	85	76
QLD	RM85-92	DRC		2-A	1:88	169	SEP/OCT	85	147
QLD	RMD55	DRC		2-A	1:62	167	JUL/AUG	85	116
QLD	SG	WFT		4	1:64	34	NOV	59	13
QLD	T	WB		4	1:64	42	NOV	62	8
QLD	U	WO		4	1:64	24	MAY	57	20-30/ 32
QLD	V	WHC		4	1:87	104	MAY/JUN	73	59
QLD	VAO	WH		BOGIE	1:142	158	JAN/FEB	84	29
QLD	VJ	WHC		4	1:87	104	MAY/JUN	73	59
QLD	VJM	WHC		4	1:87	104	MAY/JUN	73	59
QLD	VR	WHC		4	1:87	104	MAY/JUN	73	59
QLD	W	WFT		BOGIE	1:64	34	NOV	59	15
QLD	SR	WFT		BOGIE	1:64	34	NOV	59	15
SA	500	S		4-8-4	1:87	45	AUG	62	16
SA	930	DE		Co-Co	1:87	88	SEP/OCT	70	95/96
SA	AJ	PC		BOGIE	1:96	3-4	NOV	53	20A
SAR	16	S		4-6-2	1:64	54	DEC	64	11
SAR	16E	S		4-6-2	1:64	54	DEC	64	7
SM	?	WO		4	1:48	51	MAR	64	31
TT	4TYPES	WLB		4	1:38	46	NOV	62	19
TT	?	WF		4	1:38	46	NOV	62	21
TT	?	WK		4	1:38	46	NOV	62	21
TT	?	WTU		4	1:38	46	NOV	62	21

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STATE.	CLASS.	CODE.	W	ARRGT.	SCALE.	ISSUE.	MONTH.	YEAR.	PAGE.
VIC	A2	S		4-6-0	1:87	34	NOV	59	32
VIC	AJ	PC		BOGIE	1:96	3-4	NOV	53	20A
VIC	AW	PC		BOGIE	1:96	3-3	AUG	53	18A
VIC	BC	PCB		BOGIE	1:99	21	AUG	56	11
VIC	BW	PC		BOGIE	1:96	3-4	NOV	53	20A
VIC	CE	PV		BOGIE	1:96	54	DEC	64	39
					1:96	54	DEC	64	40
VIC	CS	PV		BOGIE	1:96	54	DEC	64	41
VIC	CW	PV		BOGIE	1:96	54	DEC	64	38
VIC	D13	ST		0-6-2	1:64	156	SEP/OCT	83	184
VIC	D4	ST		4-6-2	1:99	112	SEP/OCT	74	104/
									105
VIC	E	WO		BOGIE	1:87	33	AUG	59	34
VIC	E	E		B-B	1:87	83	NOV/DEC	69	SUP P3
VIC	G	S		2-6-0+0-6-2	1:98	22	NOV	56	28
					1:97	53	SEP	64	29
					1:109	129	MAY/JUN	78	80
VIC	GZ	WO		4	1:95	38	NOV	60	17
VIC	L	E		Co-Co	1:87	110	MAY/JUN	74	51/52
VIC	MN	WC		BOGIE	1:99	21	AUG	56	11
VIC	NA	ST		2-6-2	1:67	22	NOV	56	30
					1:67	53	SEP	64	29
					1:74	129	MAY/JUN	78	81
VIC	NAB	PC		BOGIE	1:98	22	NOV	56	29
VIC	NB	PC		BOGIE	1:99	21	AUG	56	11
					1:98	22	NOV	29	
VIC	NC	WBV		BOGIE	1:99	22	NOV	56	27
VIC	NT	WR		BOGIE	1:99	21	AUG	56	13
VIC	NU	WLV		BOGIE	1:99	21	AUG	56	13
VIC	QR	WO		BOGIE	1:99	21	AUG	56	11
					1:92	38	NOV	60	17
VIC	RM	DRC		?	1:100	90	JAN/FEB	71	10/11
VIC	RM1-13	DRC		1A-2	1:95	66	JAN/FEB	67	38/39
VIC	RM80-91	DRC		2-B-2	1:87	132	NOV/DEC	78	173
VIC	S	S		4-6-2	1:87	98	MAY/JUN	72	64/65
VIC	T	WI		4	1:87	39	FEB	61	16
VIC	T	WR		4	1:98	38	NOV	60	17
VIC	UB	WLV		BOGIE	1:100	84	JAN/FEB	70	11
VIC	VFNX	WF		BOGIE	1:103	144	JUL/SEP	81	90/91
IC	VHX	WLV		BOGIE	1:87	85	MAR/APR	70	30/31
VIC	VLX	WLV		BOGIE	1:87	85	MAR/APR	70	31/32
VIC	Z	WBV		6	1:87	29	AUG	58	38
				4	1:87	54	DEC	64	21
				4	1:87	83	NOV/DEC	69	13
VIC	ZMF	WBV		BOGIE	1:87	145	OCT/DEC	81	120/
									121
WA	V	S		2-8-2	1:64	43	FEB	62	20/21
WA	WBE	WBV		BOGIE	1:90	124	MAY/JUN	77	80/81
WA	WCA	DRC		1A-A1	1:87	121	OCT/DEC	76	112/
									113
WA	WF	WF		BOGIE	1:87	92	MAY/JUN	71	51/52
WA	WJK	WT		BOGIE	1:87	116	JUL/SEP	75	78/79
WA	WSA	WBD		BOGIE	1:87	127	JAN/FEB	78	16/17
WA	WST	ST		BOGIE	1:87	122	JAN/FEB	77	16/17
WA	WSW	VBD		BOGIE	1:87	120	JUL/SEP	76	80/81
					1:87	125	JUL/SEP	77	112/
									113
WA	WVX	WV		BOGIE	1:87	138	JAN/MAR	80	18/19
WA	WWA	WHW		BOGIE	1:87	128	MAR/APR	78	48/49
WA	Z	WBV		BOGIE	1:87	113	NOV/DEC	74	PIII

Get on the Right Track with

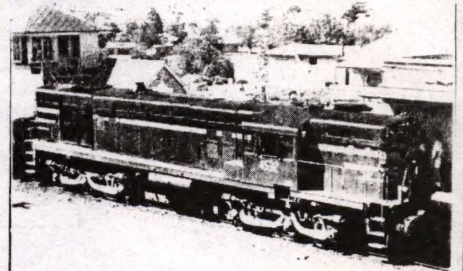
Powered and Painted with different numbers

N.S.W. 45 Class

Red Terror	4529, 4537
Indian Red & Chrome	4501, 4505, 4509 45
Reverse	4508, 4502
35 Class	3507, 3527, 3513

S.A.R./A.N.R. 600 Class

Mustard Pot	602
Red & Chrome	



45 CLASS (ANR 600 CLASS)

WHEEL SETS

9.5 mm dia. 25 mm axle length	\$1.17
10.5 mm dia. 25 mm axle length	\$1.17
9.5 mm dia. 26 mm axle length	\$1.17
10.5 mm dia. 26 mm axle length	\$1.17
10.5 mm dia. inside bearings	\$1.44

BRAKE DETAILING KIT \$6.30

BRASS BEARINGS \$

MOTORS

Mashima 1626 Round Cam	\$25.20
Mashima 1830 Flat Cam	\$25.20

BUFFERS (Freight and Passenger) \$

BOGIES (less wheels) \$1.26

CONTAINERS (packet 3) \$11.34

PAINT

Indian Red, Red Terror, Orange (Candy), Yellow (Candy), Black, Etched Black, Traffic Yellow (Mustard Pot), SAR Red, SAR Light Grey (Chrome) \$2.88

THINNERS

Enamel \$7.65

Etched \$9.45

CORRUGATED IRON (15cm x 17cm) \$2.34

DECALS

Numeral Decal Sets (in white for goods wagons)	\$0.81
RU Decal Sets	\$0.81
OCY Decal Sets	\$0.81

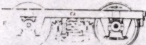
Decals also available for all AR Kits



GLOUCESTER FREIGHT BOGIES

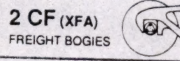
2 AT

FREIGHT BOGIES



2 CM

FREIGHT BOGIES



2 CF (XFA)

FREIGHT BOGIES



2 CL (XCL)

FREIGHT BOGIES

2 AE

FREIGHT BOGIES



2 CG (XCG)

FREIGHT BOGIES



2 CH

FREIGHT BOGIES



2 BP

FREIGHT BOGIES



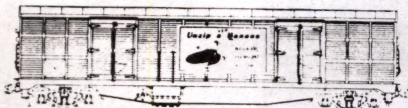
2 BR

FREIGHT BOGIES



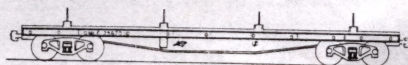
\$6.75

\$6.75



NLBX - Banana Van

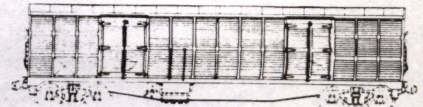
\$20.25



MLE - Flat Wagon HMX - CMX

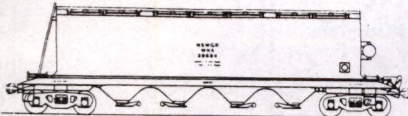
UME - LE - JME - GME - HME

\$16.20



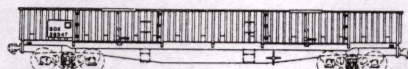
GLX - Louvre Van GLV

\$16.20



WHX - Aluminium Wheat Hopper

\$16.20



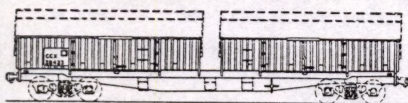
BDX - Corrugated Side-Open Wagon

\$16.20



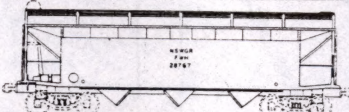
BCH - Coal Hopper FCH - HCH

\$16.20



CCX - Corrugated Side-Open Wagon Kit for Carrying Coil Steel

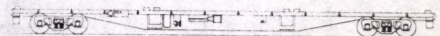
\$16.20



FWH - Wheat Hopper

BWH - BRH - LBH - HRH

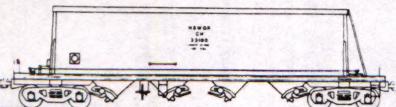
\$16.20



OCX - Container Truck

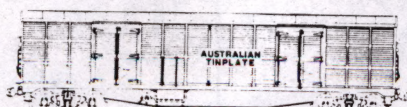
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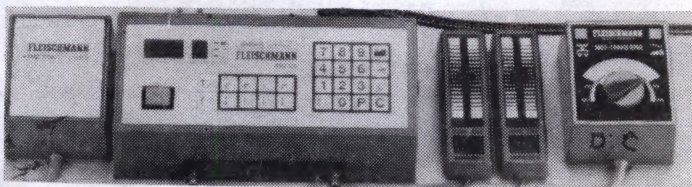
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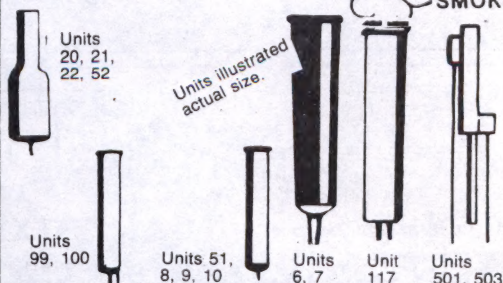
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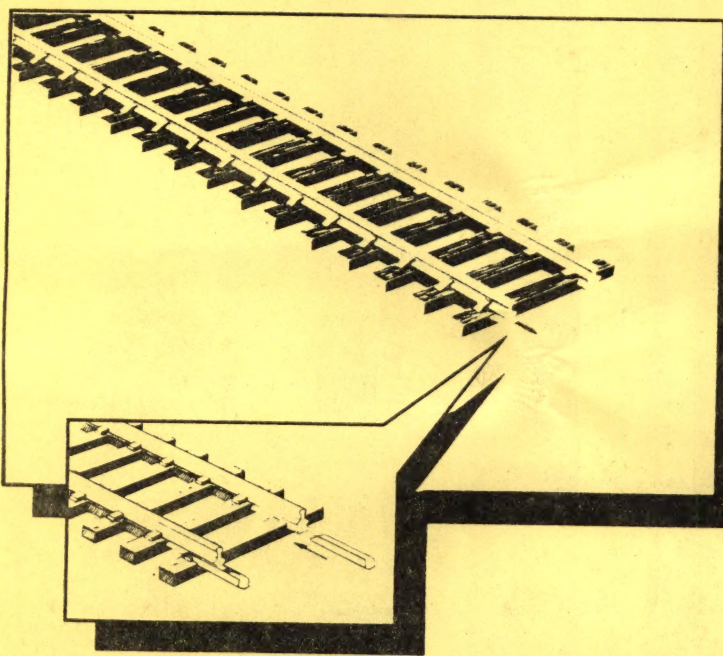
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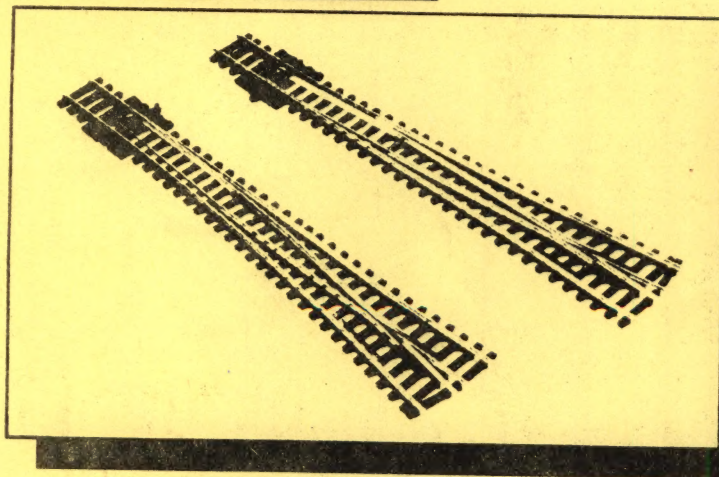
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